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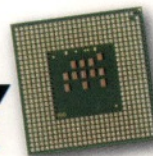
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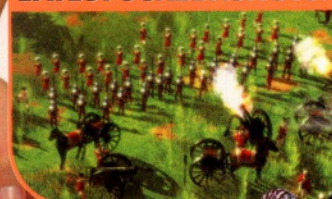
10 INKJET PRINTERS TESTED!
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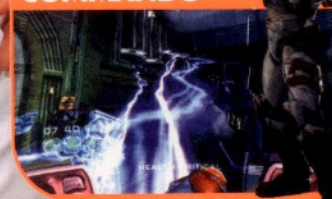
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FREE CALLS FOR LIFE

A masterclass in VoIP and how to use your free headset!*

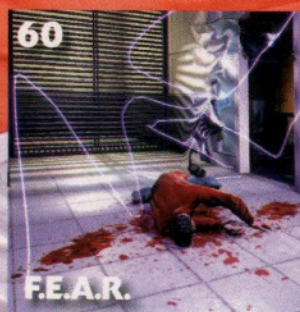
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*Headset not available in the USA

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Handheld video



F.E.A.R.



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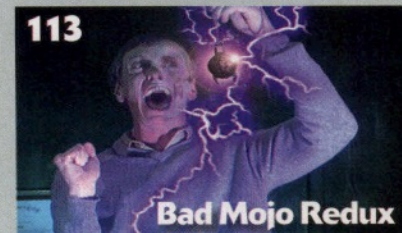
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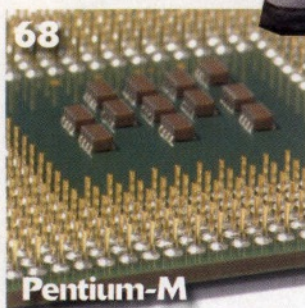


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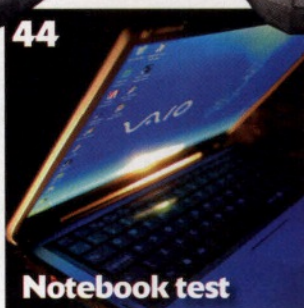
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NVIDIA Drivers Essential drivers
SANDRA 2005 Standard System diagnostics
Voice Recognition Toolkit For use with your headset

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sorted by subject area

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Complete Internet Cleanup Pro Cover your tracks
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General 140

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Thunderbird Emails are go!
TurboCASH Accountancy at its best

Entertainment 120

Ashampoo Media Player Clean entertainment
DivX player Plays DivXs maybe?
FastStone Player Customisable media player
JetAudio Basic Alternative media player
Media Player Classic Lightweight media player
MediaMonkey Manage your music like a jukebox
Minilyrics Learn the lyrics of your favourite songs
RealPlayer Everything you need from a media player
WinAmp Pretty skins with this media player
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BonkEnc CD ripper and audio encoder
bum4free Burns anything anywhere... for free
CDex Rip audio files
CoolPlayer Cool audio player
Digilogue Plug-in pack for audio masters
FLAC Free Lossless Audio Codec
KMP3 Swiss army knife for audio files
MP3 Book Helper Fix and edit tags
Music Maker Silver Does what is says on the tin
P2PRadio Become an online DJ
Vorbis Tools Encoding and streaming technology

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Acronis True Image 8.0 Snapshot of your HD

allSnap Snap your windows to line up with each other
BootSkin Change the boot image
ChangeExt File extension modifier
CursorXP Customise your cursor
LiteStep GUI replacement for XP
Logon Loader Change the face of your login screen
NeoTweak XP Customise Windows settings
ObjectDock Task manager and program launcher
Samurize Be aware of your PC's vital statistics
Service Controller XP Control app startup options
SphereXP Create a 3D desktop
Virtual Desktop Toolbox Customise your desktop
Vital Desktop Animated backgrounds
X-Setup Super tweaking app

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CinePaint Image retouching program
Firebird Feature loaded relational database
Firefox Linux based browser
Gaim Multiprotocol instant messaging client
Mozilla Suite Full internet utility package
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The GIMP Cheap version of Photoshop
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Wine Bring Windows programs to Linux
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FastStone Image Viewer View your images
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FxFoto Organise your photos
IrfanView Graphics manager with multi file support
PixVue Complete image management tool

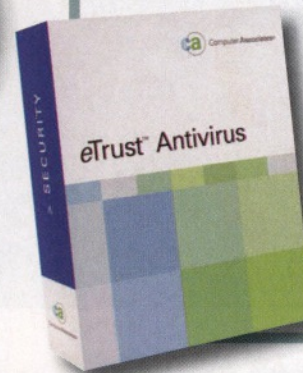
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Distractions

Got a viral infection?

eTrust Antivirus is the award-winning program from the team who have consistently kept one-step ahead of the hackers. Used by a large proportion of the corporate world, you could do a lot worse than to install this beauty on your machine for safety's sake. Be prepared.



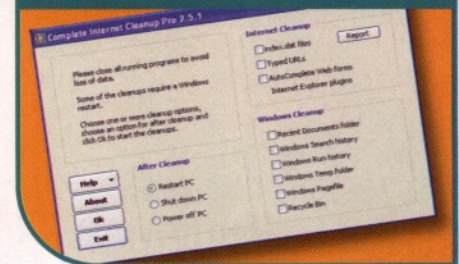
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The GIMP Strangely named graphics editor
UniDream PowerBatch Watermark your photos
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ADRIFT Text based adventure
Adventure Game Studio Create point and click games
Game Maker Lazy game making
Legendary Tales Textbased medieval gaming world
Point&Click Development Kit Make an FPS
RPG Toolkit RPG development made easy
Sphere Create your own RPGs
The Scrolling Game Dev. Kit 2D game development
Tile Studio Development utility for tilebased games
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Anti Ports Keep Trojans out
AirShare Make your wireless network exclusive
eTrust Antivirus Security at its strictest
eTrust Port Enabler Port safety checker
Gaim Multi protocol IM'er
Micro Net Utilities Make sure you monitor everything
NEWT Become the ruler of your network domain
Prevent Deletion Ensure you don't lose anything
Secure Copy Enables you to share your connection
SpeedTest Tests your connection speed
TightVNC Remote control other PCs
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Coding 134

Basic4GL Create OpenGL based games
Crimson Editor Effective source code editor
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DevC++ Fullyfeatured IDE for the C/C++ programming language

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FCkEditor Online word processor

Hexplorer A hexadecimal file editor

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Notepad2 Notepad 1 is old fashioned

SmallBASIC Not big, quite clever

Texture Maker I said textures not textiles

wxBasic A useful interpreter

XBasic Exciting text editor

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3DMark05 Evaluate your gaming hardware

Belarc Advisor Create a complete system profile

Computer Profiler Interrogate your PC

CPU-Z Detailed CPU info

Digital Dolby Achieve excellent sound

Emsa DiskCheck Keep an eye on your hard disk's performance

FreeMeter Monitor your PC's performance in realtime

HDClone Create an excellent clone without arthritis

HeavyLoad Stress test components

PCMark04 Measure your PCs overall performance

Prime 95 Top benching app

SiSoftware Sandra 2005 System analysis

Graphics 132

3D Canvas Realtime 3D modelling and animation tool

Anim8or Y3ah, anim4te it Dud3

Art of Illusion Similar to the art of deception

BEHEMOT 3D rendering fun

Blender Comprehensive 3D modeler

Elefont Easy to use image editor

freeCAD Create wonderful 3D objects

Now3D Get it now

Pivot Stickfigure Animator Me Xiao Xiao, you Jane

UnFREEz Enables you to create animated GIFs

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eTrust Port Enabler Port safety checker

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2 Will of Steel

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- Right button Move
- Ctrl + A Select all

3 Act of War *

- Left button Select
- Right button Move
- C Capture
- A Attack
- S Stop
- F2 Airstrike

4 Champions League 2005

- Arrows Move
- A Cross / slide tackle
- S Pass / change player
- D Shoot / stamp tackle
- W Through ball
- E Sprint

5 Settlers: HoK

- Left button Select
- Right button Move
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- Insert/delete Rotate camera
- Page up/down Zoom

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3

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5

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March 2005

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gearbox
software



UBISOFT



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the men I led out were brothers"

Sgt Matt Baker - 101st Airborne

BROTHERS ★ IN ARMS ★ ROAD TO HILL 30

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PCFormat

Welcome

March brings an issue full of surprises – and it's been as much an eye opener for us as it will be for you, I'm sure. For a start, there's the discovery that Voice Over IP is not only cheaper than using a standard phone line, but it's just as functional and usable now too. Gone are the days when it was restricted to PC-to-PC calls.

I have a Media Center-style PC at home that's always on, acting as a PVR, server and hi-fi. It was easy to install SIP software on it and let it take

over as my phone connection too. I've become a convert – I hope you'll feel the same way after trying our free gift and special introductory offer we've arranged with Sipgate.

That's not the only great discovery we've made. The Pentium-M, that low-powered, underclocked laptop chip, has been freed from its portable confines thanks to a couple of free-thinking motherboard manufacturers, and well – you'll have to flip to Jeremy's review on page 68. It heralds a whole

new era of small, quiet and ludicrously powerful PCs.

Our final fantastic 'find' is the independently developed *Darwinia*. It's our highest scoring game this month, and puts developers of shamelessly unoriginal franchises to shame.

Enjoy the issue!

Adam Oxford, Editor



**Alec Meer,
Features Editor**

Striving to cope with two months sans broadband, Alec played every game sent into the office, with unfortunate side-effects. *Republic Commando* has made him sadly anticipate *Star Wars Episode III*, and he already knows the plot to the *Constantine* movie, having played through the tie-in game's preview code. The less said about *Varmint Hunter*'s effect on his attitude towards his pet rats, the better.

Achievement of the month Bose offering to fix his QuietComfort headphones, having read of their tragic fate in *PCF170*.



**Dan Grabham,
Technology Editor**

Another month of strife for PCF's beleaguered Tech Ed. He's had to wander about with several Flash drives in his pocket (p83), tapped away on strange-looking keyboards (p78) and listened to streaming audio (p77). Moving to PCF's shiny new offices also meant Dan spent days with his head in a crate.

Achievement of the month Packing approximately 30 tons of PC guts into large green boxes.



**Dan Griliopoulos,
Games Editor**

As if to counterbalance his addiction to the light, airy *City of Heroes*, Gril went to Paris (in the spring time) to see the terrifying FPS *F.E.A.R.* He returned a wreck of man,

unable to string a sentence together or perform basic personal hygiene. The rest of the team were pleased at the improvement and are trying to dispatch Alec for a similar trip.

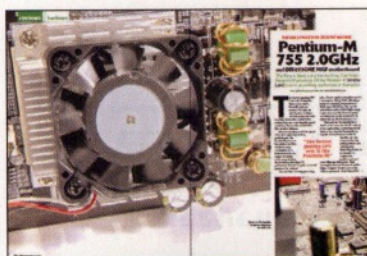
Achievement of the month Killing a Stay-Puft snowman in *City of Heroes*.



**Jeremy Laird,
Technical Writer**

This month has been even busier than usual for PCF's representative in high society. He discovered that Intel's mobile chip makes a blistering desktop processor (p68). What Intel thinks about this we're not sure. Then he went on to grapple with ATI's new £200 Radeon X800 XL (p72), and had a look at two PDAs that may well save the very concept of the handheld PC (p76). The man never stops... except for high tea and cucumber sandwiches, of course.

Achievement of the month Broke two LCD displays and a hire car, and – gasp – was forced to use public transport.



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CPUs - Motherboards

DVD - Cases - LCDs

Memory - Water Cooling

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AROUND THE WORLD WITH PCFORMAT

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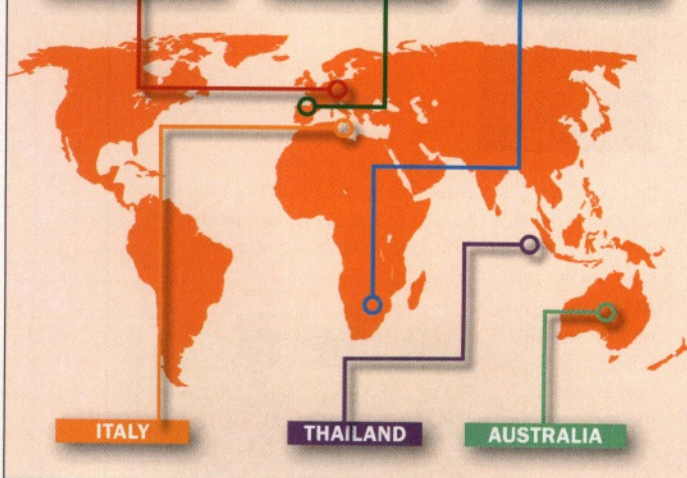
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*BT Broadband Basic is not suitable for online gaming. Monthly rental from £24.99 a month with Direct Debit (minimum 12 months). Xbox console and Xbox Starter Kit required. Broadband from BT subject to availability and survey. BT line or similar required. See website or call for latest modem/router prices with telephone orders. Other conditions apply. Microsoft, Xbox, Xbox Live and the Xbox and Xbox Live logos are either registered trademarks or trademarks of Microsoft Corporation.

Frontend

THE BEST OF THE MONTH IN COMPUTING

Eye Candy Ahoy there!

This issue's £2,249 prime specimen comes from Leamington Spa-based gaming PC builder LAN Pirates.

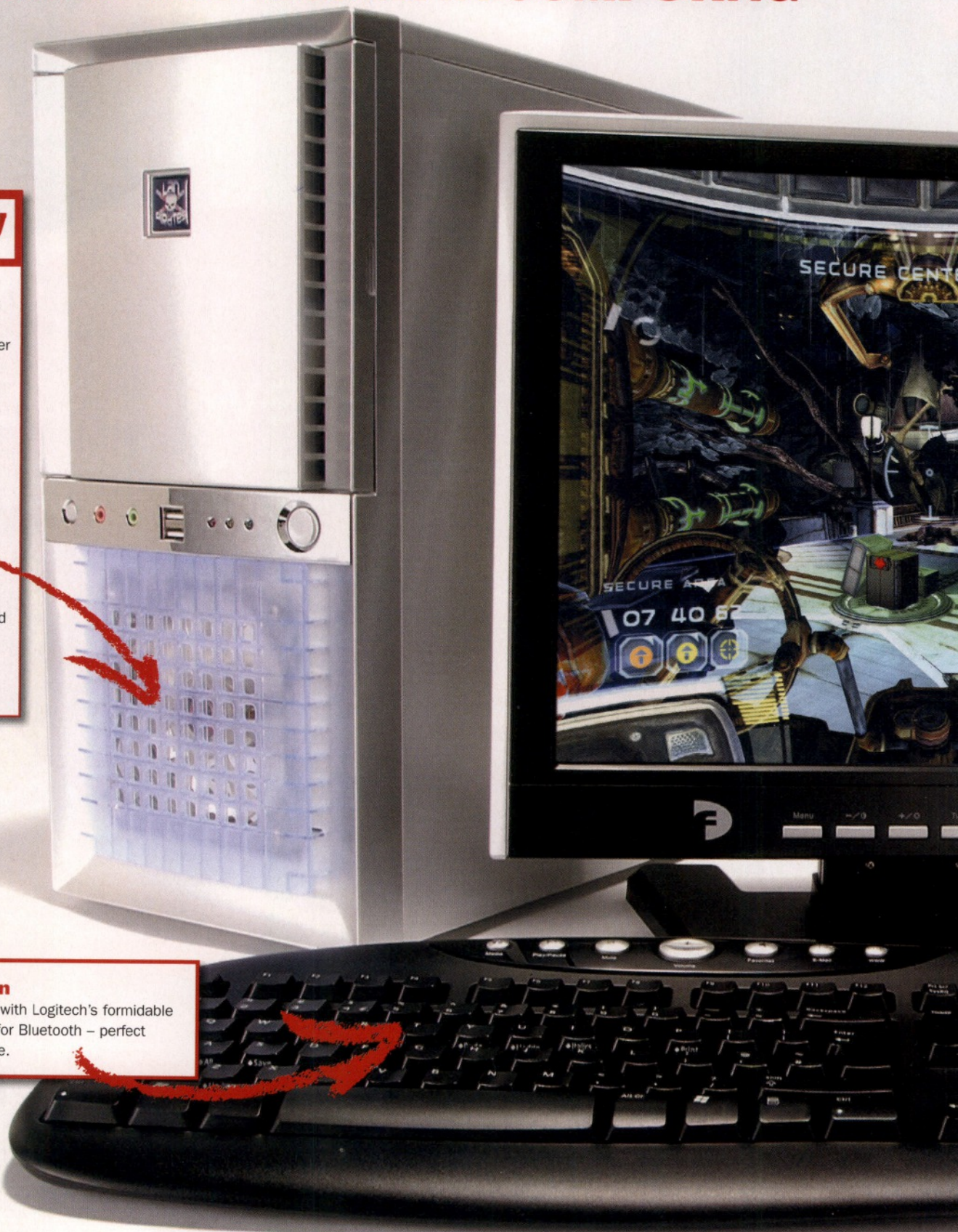
www.lanpirates.com

Inside:

AMD FX-55 2.6GHz
MSI K8N Diamond
Motherboard
2 x MSI 6800GT
256MB PCIe
Crucial Ballistix 1GB
DDR memory
2x 200GB Seagate
Barracuda hard drives
Intel Onboard 7.1 Sound
Sony DW-D18A DVD
Rewriter
Sony CRX320E DVD/
CDRW

Bluetooth heaven

Our star PC is teamed with Logitech's formidable Cordless Desktop MX for Bluetooth – perfect for lag-free performance.



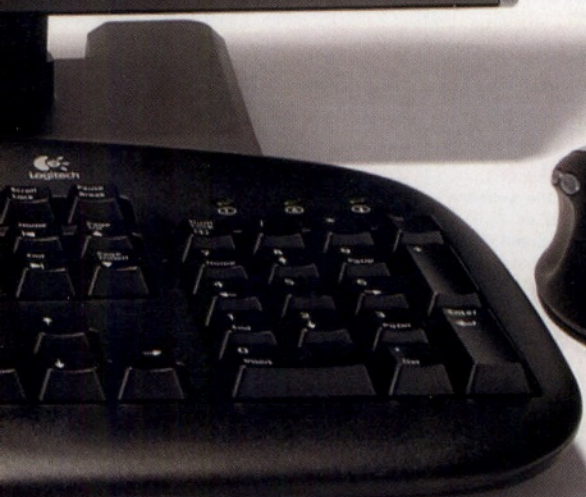
You'll never walk a clone.

Can LucasArts' team shooter, *Republic Commando*, live up to the majesty of *Jedi Knight*, *KOTOR* and *X-Wing*? Just what does it reveal about *Episode III*? Take control of a team of clone commandos for the assault on Genosis, in fast-paced, sci-fi action. www.starwars.com



Pirate mouse

Logitech's deskset incorporates the rather fine MX900 mouse, although the PCF fave remains the MX1000.



March Diary

Easter – the time you pay £4.50 for a lump of chocolate that would normally cost 53p. Still, as Spring is now in full swing, you can throw off that winter coat, turn off the fire, and get out there to do things of an evening. If you're bored after the long winter, PCF once again comes to your rescue with some choice things to do...

1 March

National Pig Day

For the Welsh today is the day to celebrate St David. We have no Welsh among our number, so instead we will celebrate National Pig Day, with our American cousins. It seems like a great excuse, as much as any other, to spend a moment or two thinking about the plight of pigs on farms, or the smell of sizzling bacon, whichever you personally prefer.

www.egreetings.com



17 March

St Patrick's Day

No March round-up would be complete without mention of the all-important St Patrick's Day. It's still thoroughly traditional, after all – it's not as if everyone jumps on the bandwagon. Try

telling that to the regulars at your local O'Neill's. Talking of which, the link below gives an idea of how the PCF team will be spending the evening.

www.guinness.com

10-16 March

CeBIT

It's the turn of the Germans to have a party, as Europe's biggest computer show takes centre stage. The event, in Hanover, has over 6,000 exhibitors, including most of the big names in the business. It's not the biggest feeding ground for those anxious for ground-breaking launches, but still expect some interesting announcements.

www.cebit.de

28 March

Queen for a day

Brian May, John Deacon and Roger Taylor hop on stage for the first date of this year's Queen tour. Former Free vocalist Paul Rodgers will be lending his lungs to some of the nation's favourite tunes. If you're not a member of Queenonline.com, you won't have a ticket for the Brixton Academy gig, but the band is touring during April and May.

www.queenonline.com

top
stories

p21

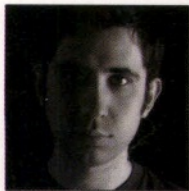
THE BIG FIGHT
HD-DVD vs Blu-ray to rule DVD

p23

FACE OFF
The PC fends off the Mac Mini

p24

SPY BY NITE
Unauthorised access to CCTV



Alec Meer
SHUFFLES OFF

The iPod Shuffle is lying dead in the water

Although driven to reach for automatic weaponry whenever I see two fellows wearing white earphones do the secret-society nod to each other in the street, I've always been happy to put my hand up and admit that, yes, the iPod is a wonderful piece of kit. When it was launched everyone knew immediately what the iPod was, and why they should buy one. Now, the screenless, flash-based iPod Shuffle has arrived, it's slogan should be "Enjoy uncertainty."

Erm. Say again?

Uncertainty is exactly what anyone mulling over what on Earth the Shuffle actually does is going to feel. The concept of never being sure what songs your player is going to present your ears with – especially because there's no way of finding out what you're listening to unless you already recognise it – isn't going to induce world-wide mutual orgasms from the Shuffle's predecessors. Kudos to Apple for creating something that isn't going to cut into its existing iPod Mini and Major markets, but that's only because folk are going to whimper in confusion at it, and, buy a better player for the same price or less.

Picture © Kobal

Is someone using spyware to watch you? Microsoft will stop them

Spynet is watching

Microsoft has finally gathered its equipment and goes to war against spyware... will you join the fight or be consumed?

Spyware is the new communism. Granny's PC loading too slowly?

"Spyware..." she'll whisper, eyes flicking nervously around the room. Pornographic images in your Recent Documents list? Yup, spyware takes the blame. It's the word on every computer user's lips, the secret menace that lurks in every darkened digital corner. Whereas hacking and phishing are esoteric concepts to the less adept PC user – confusingly-named threats whose effects they're unsure of – the word 'spyware' is self-explanatory. Someone is spying on you. And, a good five years after the concept and the threat was

introduced at large, Microsoft is taking the lead in trying to stop it.

A few weeks back, it launched *AntiSpyware*, the first fruit from its recent purchase of security firm Giant. And it's very good. The more cynical might observe that it's almost identical to Giant's offering before the purchase (indeed, our firewall app even refers to it as 'Giant AntiSpyware'), but the fact is that it found nasties on our system stalwart malware hunters *Ad-aware* and *Spybot* didn't. It also introduces Spynet, an opt-in system whereby you can report any hitherto undocumented potential spyware on your system to Microsoft for analysis. The results

will help continually update *AntiSpyware*'s definition database. One place it did fail, however, was to alert us that accessing Hotmail in Internet Explorer sees the attempted installation of well-known (if minor) adware *Avenue-A* and *DoubleClick*. *Spybot* diligently blocks this, but for some reason, the Microsoft application doesn't mention that there's adware on a Microsoft webpage. Funny, that. More controversial is Microsoft's muttering that it may start to charge for *AntiSpyware* once the beta test ends. While it's still free, grab it from www.microsoft.com/athome/security/spyware/software. Find out more with Luis on p147.



Four ways to make Internet Explorer safer right now

Even with a spyware stopper, IE still has more holes than a rusty cheese grater. Here's how to enjoy safer surfing today

THE PROBLEM:

Any website could read the contents of your Windows clipboard if it wanted to – a potential way to harvest email addresses and bank details that might have been pasted in there.

THE SOLUTION:

In IE, go to Tools→Internet Options→Security. Then select Internet Zone and choose 'Custom Level'. From the list, find 'Allow paste operations via script' and then hit Disable.

THE PROBLEM:

Unpatched at the time of writing is an HTML help file exploit allowing someone to remotely hijack a PC.

THE SOLUTION:

As in the tip left, but this time disable (or set to 'Prompt') 'Drag and drop or copy and paste files'. Alternatively, this tool lessens, though doesn't remove, the problem: www.microsoft.com/technet/security/bulletin/MS05-001.mspx

THE PROBLEM:

Certain high-profile websites (such as Hotmail, as mentioned above, and eBay) install adware and/or tracking cookies when visited in IE.

THE SOLUTION:

Spybot-S&D (<http://security.kolla.de> or on our coverdisc) immunises your PC against hundreds of known ad and spyware apps, automatically blocking those on Hotmail and eBay.

THE PROBLEM:

New security flaws in Internet Explorer are identified on an almost weekly basis, not all of which are patched straight away (if ever).

THE SOLUTION:

Use a different browser, ideally Firefox (www.getfirefox.com or on our coverdisc). Though not without its own holes, it's significantly safer than IE, partly because it's used by far less folk, so baddies are less inclined to exploit it.

Battling it out for supremacy, HD-DVD versus Blu-ray.



Dawn of the high-def

Puny bitrate DVD? Pah! Next-gen digital video is here – well, as soon as the industry stops arguing over which format to use

Picture © Corbis

Here's our theory. VHS, CD and DVD have all done well. Betamax, 8-Track and DVD-A haven't. So, using the world famous rule of Alphabetology we've just invented, any media format with more than three characters in its name has, historically, gone belly-up. This could be something to do with the limited mental acuity of your average high street shopper, but we'll keep our sociopathic opinions to ourselves on that.

So, in the upcoming war between Blu-ray (BD) and High Definition DVD (HD-DVD) as to which format will be the next-gen video standard, our money's on the cool brevity of the former. Two letters are far more memorable than five and a hyphen, y'see.

To the casual inquirer, differences between the two optical discs hoping to oust DVD's iron grip on both the home entertainment and PC storage markets are limited. Both will support the same video codecs – a variant of MPEG-4 and VC-1 (based on Microsoft's WMV9) – offering video at a higher resolution and bit rate

(36Mbps compared to 11.08) than DVD. They also both promise backwards compatibility with DVD in their players. The recent development of a new anti-scratch coating means BD is freed from the bulky, expensive cartridges it was originally due to require, too, so both formats now look

like any old 12cm optical disc.

Which leaves one big difference. HD-DVD is capped to a 30GB capacity (compared to DVD's 9.4GB), whilst Blu-ray promises 50GB, which could rise to

100GB or higher in the future by adding further layers to the discs. BD, then, is unquestionably the better technology, but unfortunately that doesn't mean it's automatically going

to win out as the standard future-format. Though neither format will go mainstream until 2006, film and game studios are already picking sides, so it's likely to be the question of which big name (Sony leading the BD charge, Universal HD-DVD) wields the most clout – either that or we'll all have to plump for more expensive hybrid players that support both formats.

The other deciding factor, amusingly, is going to be the porn industry. Given that it releases in the region of 11,000 explicit DVD titles a year, it's likely to tip the balance one way or another. It may well go for HD-DVD, as its similarities to DVD mean manufacture will be cheap and easy, compared to Blu-ray, which will require new machinery to create the discs. Pun-writers will be lamenting if blue movies didn't opt for Blu discs though.

"The deciding factor is going to be the porn industry"

HEARD THIS? "There are some new modern-day sort of communists who want to get rid of the incentive for musicians, moviemakers and software makers..." Bill Gates invokes a desperate 'reds under the bed' warning against evil filesharers. Dear oh dear..."

HOT

S.T.A.L.K.E.R.

The sheer scale of this Russian freeform FPS' ambition means there's a lot could go wrong, but while we're still in an Eastern European mood after Half-Life 2's City 17, the Chernobyl-with-zombies setting looks like a lovely place to visit.

Spammers in the dock yet again

The State of Texas is suing one of the world's top five spam companies for millions. Texas authorities worked with Microsoft to set up an elaborate trap for the company, nabbing its owners after a honeypot email account received 24,000 spam messages from them.

Games Foxed up

Aaaaaaaaargh! Rupert Murdoch wants to enter the games industry, admitting to taking a look at several major companies – including the once-thought untouchable Electronic Arts.

Duff MP3 players

So the iPod Shuffle is great because it doesn't have a screen? The Creative Zen Micro can display photos – but you can't upload your memory card to it? This industry makes no sense.

Unimaginative mods

If we see one more Half-Life 2 mod announced by the release of some grey 3D renders of guns, we're going to give it all up and proclaim Minesweeper the best game of all time.

NOT

What are you Pimping?

Lisa Thorne
Superbike rider, Team NVIDIA
What are you pimping?
Team NVIDIA – boys and girls going very fast on bikes.

Why should we give a rat's arse?
You're kidding, right?
Superbikes in the UK have attracted the biggest single day spectator attendance of any sport for the last seven years!

What's lurking on your hard drive?
MotoGP helps me learn new race tracks. Half Life 2 as well, which is great but I'm not so good at it. Links to all the web sites around the world that feature Team NVIDIA, my daily diary (no you can't look, it's a secret!)

What's on your playa?
Robbie Williams – I'm an Angel, you see – loads of funky house, great music to work out and crash out to, that's what I like!

Too good to be true

Been offered a cutting edge processor at a bargain price lately? All is not quite as it seems...



Your AMD chip should come in a box like this...

When is an Athlon 64 not an Athlon 64?
When it's one of a batch of 60,000 defective CPUs seized by Taiwanese authorities last month. The chips, taken from an AMD testing factory, were re-marked as fully functional, and then the internet rumour mill claims around one million rebadged chips are already circulating in the European grey market. The grey market is, essentially, products not imported through official channels; it's not actually illegal, so some smaller retailers avail themselves of it in the hope of undercutting rivals' prices. "Customers can't actually really tell whether a CPU is grey or not" warns Andy Gibson from www.overclockers.co.uk. "We would advise them to only purchase from large companies like ourselves and Dabs, who only buy through recognised official channels."

So is your 2.4GHz pride and joy really a 1.8GHz train wreck waiting to happen? AMD has flatly denied that any rebadged CPUs have reached Europe. What's more, according to spokesman Richard Barker, "buyers can have complete confidence that AMD processors supplied in full retail boxing, from any source, are genuine." By that, he means the box needs to sport an AMD hologram, a system that's been in use for six months. So if some bloke tries flogging you one in the pub, you might want to look closely. www.amd.com

GeForce FX-XXX

Of course, this was always sadly inevitable. Someone's created interactive porn, involving fully controllable 3D models rendered with varying degrees of conviction by your graphics card. How convincingly your Radeon or GeForce is going to handle "girl-girl and girl-boy action" starring a pixel-shaded recreation of porn

superstar Jenna Jameson and, presumably, a number of her more broadminded friends, we don't know, but the promise that you can "appear as yourself in the game" is frankly a disturbing one. If you're completely lacking in irony, feel free to witness this technological breakthrough in action at www.virtuallyjenna.com.

334
STAT!

The approximate distance in miles traveled by the outer edge of a 7,200rpm hard drive on an average working day day.

PC CD-ROM



Win! Copies of Knights of The Old Republic II

If we were lazy journalists, we'd already have written "the Force is strong in this game" by this point. But we haven't, which makes us more powerful than you can possibly imagine.

Anyway, take away the bad taste of our terrible puns by winning a free copy of the hugely anticipated Knights of the Old Republic II: The Sith Lords, the sequel to the best Star Wars game – in recent memory. Courtesy of kindly publisher Activision, we've got 10 copies to give away. All you need to do is pop along to the competitions pages at www.pcformat.co.uk and answer the following question:

What language does R2-D2 speak?

- a) Morse
- b) DroidBasic
- c) Imperial Binary

Terms and conditions are on the website





Mac Mini vs PC

How does the Mac Mini compare to similarly priced PC rivals?

	 Mac Mini (£339)	 Dell Dimension 2400 (£329.53)	 Build-it-yourself Mac Masher (£335.49)
CPU	1.25GHz PowerPC G4	2.6GHz Intel Celeron	WINNER 1.75GHz AMD Sempron (£49.64, www.scan.co.uk)
Memory	256MB DDR333, takes up to 1GB	256MB DDR333, takes up to 1GB	WINNER 512MB DDR333 (£48.96, www.crucial.com)
Graphics	Onboard ATI Radeon 9200 32MB	Onboard Intel Extreme (shares system memory)	WINNER Sapphire Radeon 9550 128MB AGP (£42.08, available from www.ebuyer.com)
Storage	40GB 4,200RPM notebook drive, slot-load CD-RW/DVD-ROM combo	40GB 7,200RPM IDE, CD-RW/DVD-ROM combo	WINNER 80GB 7,200RPM (£38.76, www.insight.com), 16x DVD writer (£37.61, www.dabs.com)
OS & software	Mac OSX & iLife – no office package	WINNER Windows XP Home & Microsoft Works 7.0	Unless you have a copy of Windows, use Linux & Openoffice – both free
Peripherals	None	WINNER 17" CRT, keyboard, optical mouse, speakers	None
Upgradeability	RAM & HDD, though doing so yourself risks the warranty	Takes up to a 3GHz P4, any IDE HDD any PCI card- no AGP though	WINNER Any Socket A AMD CPU, any AGP or PCI card, any IDE or SATA HDD
Case & appearance	WINNER Knee-tremblingly gorgeous, near-silent lust object, available at www.apple.com/uk	Full tower, fan-assisted plastic desktop behemoth, available at www.dell.com	Shoebbox-sized Biostar IDEQ 200N barebones, available from www.overclockers.co.uk
CONCLUSION	18 The new Mac is pretty, but it lacks expansion options	28 Dell's entry-level PC is quite versatile, but looks old-hat	58 DIY offers the best of both worlds – power and price

From the backwoods of the web

1 PARANOIA

So, a suspicious looking email turned up in your inbox, but it's too tempting to completely ignore? Find out the latest news on what's hoax and what's not before you consign it to the spam bin. www.bighoaxes.com

2 POD CASTING

Recording online radio and auto-uploading it your iPod or other MP3 player for later listening is the latest techy fad. Find out more at <http://en.wikipedia.org/wiki/Podcasting>

3 PLAY TIME

We could point you to emulated classic arcade and console games, but unfortunately the law wouldn't be on our side. So here's the next best thing instead. www.arcadearena.com

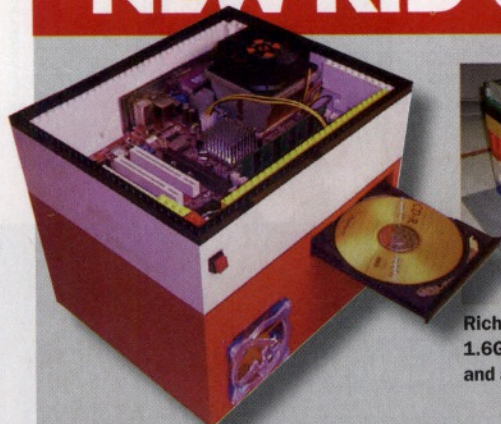
4 NERD-WEAR

Give up fighting your inner geek, and adorn your filthy body and home with PC-related frippery. We like the sweets shaped like the Linux penguin. <http://shop.store.yahoo.com/computergear/index.html>

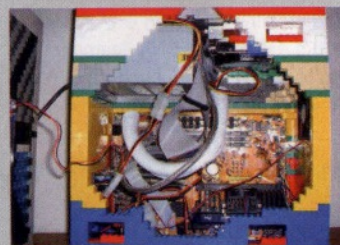
5 MARATHON

Halo creator Bungie has released its *Marathon* trilogy for free. It's dated, but there's a few innovative ideas well worth revisiting: <http://trilogyrelease.bungie.org/>

NEW KID ON THE BLOCK



Rich's latest machine hosts an AMD 1.6GB CPU, 256MB RAM, 120GB HD and a DVD/CD burner.



"I tried to make it nice to look at, but ran out of pieces early on, so out went any chance of colour co-ordination."

Multi-coloured modding

When Richard Whitmire, from California, gave up smoking two years ago he broke out his LEGO to keep his hands busy. "I was troubleshooting my PC and needed

something to separate some components, so I used LEGO. Some cables were too short, so I started thinking about just building little brackets and shelves to hold the

components away from each other. And before I knew it, there was my first LEGO computer case." Take a look at the PC at <http://members.cox.net/richw/lego.htm>.

WHO IS...

Dave Orton



Any relation to Beth?

Sadly not. This Orton is originally from Florida in the US of A, and despite now knowing a terrifying amount about pixel shaders, he was once quarterback for his high school football team.

More brawn than brain?

Not at all – after high school he graduated from Wake Forest University with a degree in Maths and Economics, before swotting up for a Master's in Electrical Engineering.

Ah, its all starting to fit now...

He became the top dog at ATI in May 2004, having been there for four years previously, following a takeover at his previous company, ArtX, where again he was CEO. Before that, he was at SGI for ten years and has also previously worked at GE and Bell Laboratories.

What's his vision of the future?

Big Dave predicts 3D gaming will be massive on mobile phones and DTV within the next five years, with ATI using its experience from the PC market to conquer the handheld gaming world.

GoogleCam

Ever wondered if you could access CCTV cameras across the world from your home PC? Neither did we, until now...

Yeah, yeah, Big Brother is watching, we all know that. But, it turns out, so are snot-nosed 14-year-old script kiddies, pretentious bloggers and anyone else who knows who to use a search engine. It's all-too-easy to access unsecured web and security cameras simply by Googling for specific phrases (here's one – inurl:"

ViewerFrame?Mode="), and then lose hours watching live surveillance of building sites, bars, laundrettes, offices and God knows what else.

One can pass a strange lunchtime watching real-time footage of some dogs asleep in China, for instance. Although since such unauthorised access to a computer system is strictly against the law, we

never would. Nor would we discover that the camera can be moved around, waking the dogs and making them bark. Nor would we retreat guiltily from such activity.

You're on your own if you choose to try it, and to be fair, anyone caught on camera really should take more care in the first place. www.google.com

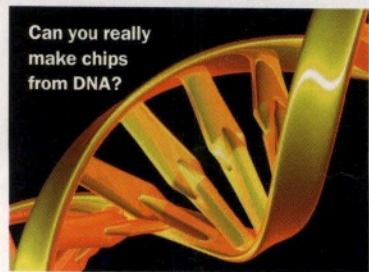
Catch some candida on camera.

DNATHLON

Fancy a genetically-modified processor? It's a step closer now that engineers at MIT have started building their own DNA strands. Biobricks – extracted DNA segments – hold a simple function, such as on/off, and are used to create a new DNA

strand which can perform a sequence of functions. Many Biobricks are analogous to electrical components so in future we could see DNA engineered to produce almost anything from CPUs to new chromosomes for the human genome. Wow. <http://web.mit.edu/be>

Can you really make chips from DNA?



Picture © Alfred Pasieka/Science photo library

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➔ Canon PowerShot A520

Price £239 Available Now Web www.canon.co.uk

Yet another mid-range delight! Following the recent release of its A510, Canon has released this model to bolster the PowerShot range. Most impressive is the 1.8-inch LCD, but 4MP and a 3x optical zoom just don't cut it with us any longer. Mind you, Canon has certainly packed the features in, with tons of shooting modes. We'd still prefer the sexy Canon Ixus to be honest but we're shallow. Or perhaps we just want one that'll fit in a pocket. After all, you'd pay more for an iPod wouldn't you, so why not a camera?

FUNCTIONAL



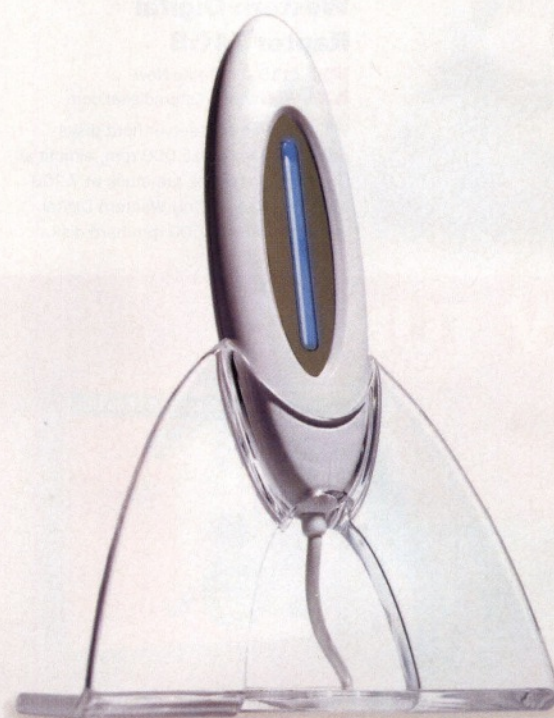
Gadgets thing

⬇ Griffin RocketFM

Price \$40 Available Now Web www.griffintechnology.com

With its iTrip adapter for iPod, Griffin caused a storm. Illegal in the UK, it transmits your iPod music as a weak FM signal so you can listen to it on any FM receiver. The company has now released the Rocket FM, a gadget that does the same – with your PC! Forget all this expensive streaming stuff, this will do the trick. However it's still illegal since it's the same as setting up your own radio station. You pirate!

DESIRABLE



Cooling

⬆ Antec TriCool

Price From £4.75 Available Now Web www.antec.com

While you wait for the single-fan miracle that is BTX to conquer your desktop, you'll still be wanting to minimize the din and control the ever-ballooning heat output of your current desktop. Antec's latest case fan line happily offers you the choice of manual or automatic (ie BIOS) controlled cooling. A three-speed switch allows you to balance quiet performance with maximum cooling. Alternatively, BIOS control through your motherboard is, of course, also possible. TriCool fans are available in both 80mm and 120mm sizes, while the blue, green, red or tricolor LEDs add a little visual oomph.

DESIRABLE



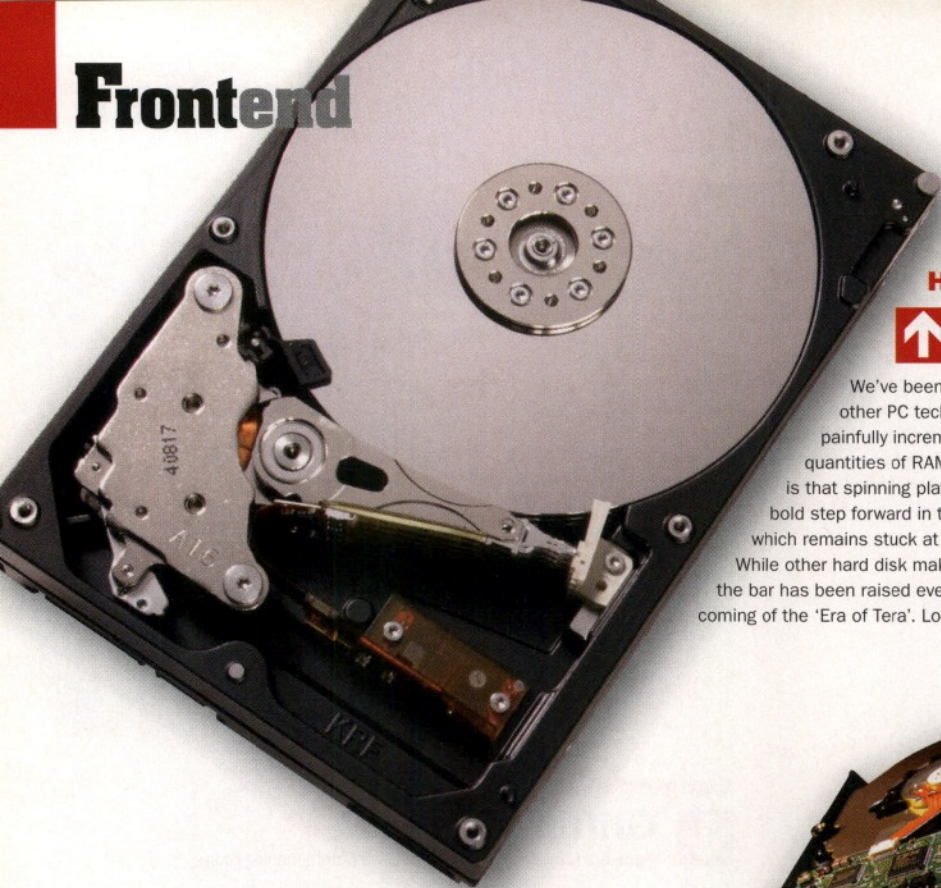
Pimped out projector

⬅ Viewsonic PJ755D

Price £1,499 Available Now Web www.viewsoniceurope.com

Although we'd be tempted to hold out another 12 months for HD projectors to become the norm, if you must buy now you'll struggle to top this Viewsonic's on-paper specs. Native resolution clocks in at a better-than-DVD (but not quite-HD) 1,024x768, but it's the retina searing 2,700 lumens brightness rating and impressive 2000:1 contrast ratio that really mark this projector out. That should be enough visual poke for viewing in even brightly lit venues. Otherwise, you won't be disappointed by the full range of video connectors, including DVI and the bundled IR remote.

DESIRABLE



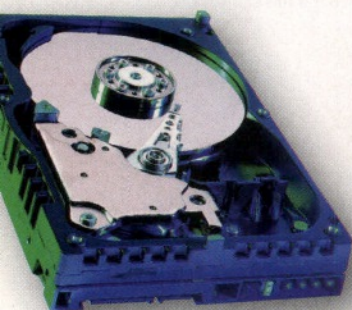
Huge hard drive

Hitachi 7K500 500GB

Price £299 Available March Web www.hgst.com

We've been getting a bit frisky about hard disk performance lately. Unlike other PC tech, hard drive performance gains in recent years have been painfully incremental. So, you can forget about £500 CPUs and unfeasible quantities of RAM – the component that's most likely to hold back your PC's poke is that spinning platter. The bad news is that Hitachi's latest desktop drive is not a bold step forward in terms of performance. That's largely down to the spindle speed, which remains stuck at 7,200 rpm. But take a look at that headline storage capacity. While other hard disk makers are struggling to match Hitachi's existing 400GB monster, the bar has been raised even higher. Pat Gelsinger of Intel recently proselytised on the coming of the 'Era of Tera'. Looks like the King of Geeks was right, for once. **ESSENTIAL**

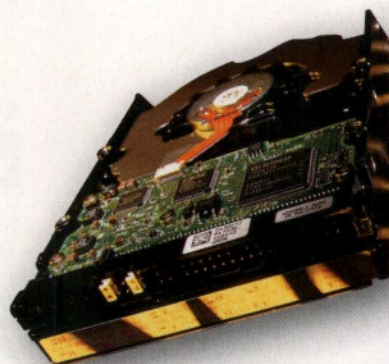
Others to consider...



Western Digital Raptor 74GB

£115 Available Now
Web www.westerndigital.com

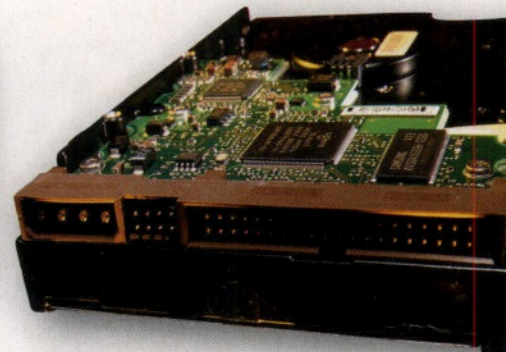
While big iron and server hard disks press on towards 15,000 rpm, almost all desktop hard drives are stuck at 7,200 rpm. Except one. Only Western Digital will sell you at 10,000 rpm hard disk.



Hitachi 7K250 160GB

£59 Available Now
Web www.hgst.com

Hitachi's hard drive division started life under the IBM. While, the new 7K500 proves it's still a technology leader, the existing DeskStar range remains a strong performer, managing the fastest seek times in our recent disk round-up.



Seagate Barracuda 7200.7 200GB

£73 Available Now
Web www.seagate.com

Winner of our group test in issue 170, the Barracuda delivers a no-nonsense package of decent all-round performance, impressive retail packaging and a price that works out at just 37p per GB. Nice.

TV TUNERS



Avermedia TV GO 007 Plus

£29 Available Now
Web www.averm.co.uk

OK, the feature list won't set your pants on fire. This is a plain-Jane analogue TV tuner, lacking hardware encode support. But then most of us are lucky enough to have PCs powerful enough to handle the encode duties on the CPU. And remember, it does cost less than £30. For your money you get 16-channel preview, a programme scheduler, an IR remote and even a parental control lock-out function. Recording formats take in the usual MPEG 1,2 and 4 suspects, allowing you to balance image quality with available disk space.



Pinnacle PCTV USB2

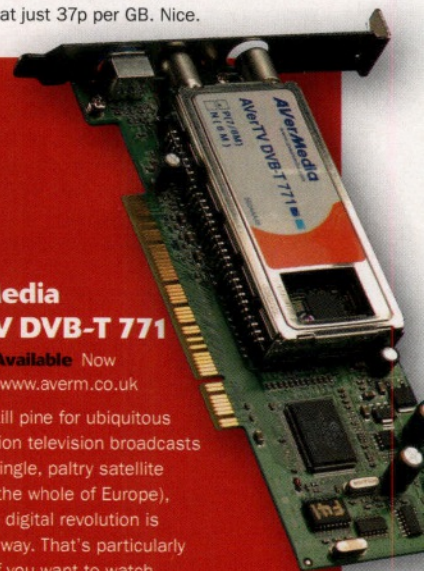
£70 Available now
Web www.pinnaclesys.com

In the bad old days of USB, using an external TV tuner was a 'very bad idea'. Thankfully, USB 2.0 has since delivered a colossal leap in bandwidth, and USB TV tuners now come very close to matching their PCI cousins for pure image quality. That they don't is down to the fact that USB tuners still need to compress TV signals into MPEG2 streams to squeeze them through that cable. Still, this is a very handy little device for adding TV capability to almost any PC or laptop for a reasonable price.

AverMedia AverTV DVB-T 771

£70 Available Now
Web www.averm.co.uk

While we still pine for ubiquitous high-definition television broadcasts (there's a single, paltry satellite channel in the whole of Europe), at least the digital revolution is well on the way. That's particularly important if you want to watch TV on your PC – LCD panels are brutally unforgiving of analogue TV signals. Assuming you have access to a suitable high-gain TV aerial, this digital PCI card will deliver an immaculate rendition of all the channels available via the Freeview digital TV service. Oh, and that includes a bucket load of digital radio stations, too.



Card campers

Gathering of gamers at online poker event

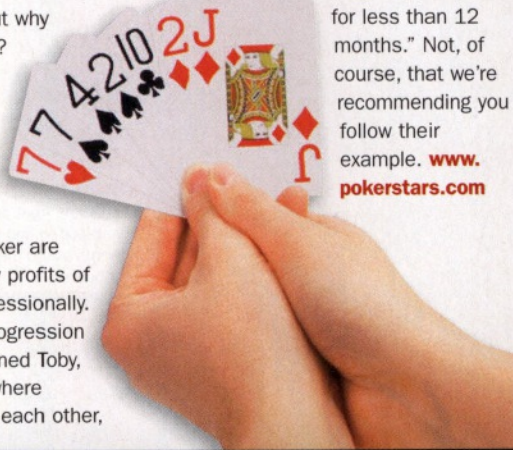
From frags from to flushes... Online casino PokerStars (www.pokerstars.com) invited nine pro gamers across the globe to a poker championship earlier in the month. The day was won by ElKY – Korea's Bertrand Gropel – who beat off head of 4Kings (www.four-kings.com) and sometime PCF contributor Toby Aldridge and his fellow team members Marc Mangiacapra and Iain Girdwood in the final to earn a place in the Deville leg of the European Poker Tour later this month.

All very interesting, but why pick a bunch of CS heads? Well, apparently there's a trend among the pro-gaming community to migrate their skills towards the online casinos. In some cases, earnings from internet poker are outweighing the day-to-day profits of playing *CounterStrike* professionally.

"Poker is a natural progression for online gamers," explained Toby, "it's a game of strategy, where players need to outsmart each other,

think ahead and plan certain traps, and these are all skills that pro-gamers have." He also told us that while he prefers live, face-to-face poker, some of the hardcore gaming fraternity can notch up 70-odd hours a day poker time by playing eight tables in a virtual casino simultaneously.

According to Toby, "It doesn't take long to reach a high standard at poker, or at least a winning standard... A lot of players I know make more money than you can shake a big stick at, and have been playing for less than 12 months." Not, of course, that we're recommending you follow their example. www.pokerstars.com



NEWS IN BRIEF

Zomb 'em-up

Possibly a little irked that everyone's cashing in on zombie movies except him right now, godfather of gore George A. Romero is lurching into the games industry. He's working with Surrey developer Kuju on an as-yet untitled project, but already phrases like "reinventing the horror genre" are being thrown around. Hmm.

Seedy claim

Apple is suing a teenager for revealing leaked information on its Mac Mini before the official announcement. Fortunately, 19-year-old Nicholas Ciarelli of thinksecret.com isn't bowing before this flagrant attack on freedom of speech, so the Electronic Frontier Foundation (www.eff.org) has helped convinced major legal firm Gross & Bels to take his defence case – for free. Odds are fairly strong Ciarelli will win, so long as his information was obtained legally – which could mean a major blow to Apple's über-cool, friendly image.

Crimes of the heart

It's the stuff of nightmares for a serious gamer – a Japanese woman so enraged by being dumped by her lover exacted a cruel revenge by logging into his *Lineage* (an online roleplaying game massive in the Far

East) account and deleting all of his character's hard-earned weapons and items. She's facing police charges for illegal access, but the most heart-breaking part of the tale is that the couple originally met on the game's server.

Wi-Fi-Fo-Fum

Beware of evil wireless! Apparently the world has secretly been infiltrated by hoax Wi-Fi hotspots, which spoof legit public access points, but in fact are honeypots set up to intercept and steal unwary surfer's data. They've been nicknamed 'Evil Twins', and the standard warning is to make sure you've set up adequate security (ie. encryption and a firewall) on your laptop before using a wireless hotspot.

QUOTE!

"I do not believe it is reasonable to place a user in a position where this free software will also make their machine sluggish." Sharman Networks CTO, Phillip Morie, laments the adware his bosses bundle with Kazaa.

They think it's all over

With so many BitTorrent sites run out of town, how are hungry filesharers filling the void?

Reports of the death of filesharing have been exaggerated. It seems a fairly concentrated advertising campaign (including the infamously awful 'man in a balaclava' FACT ad) and the closing down of Suprnova.org, the most popular BitTorrent site, apparently due to legal threats, was enough to put the wind up a few people. Turns out this wind was fairly swiftly expelled, with a number of rival sites stepping up to bat instead, and downloading continuing apace. More sinisterly, the curtain call of Suprnova, a bona fide tragedy to many, wasn't what it seemed. Within days, its owner Sloncek re-emerged with a project, eXeem – BitTorrent-based and decentralised, rather than being a privately-owned website, to dodge lawsuits. And there was much rejoicing. Until it became clear that Sloncek's only involvement with eXeem was being paid large amounts of money to front it, and that, cynics proclaimed, was why he'd closed Suprnova. He's also confirmed that there'll be

adware in eXeem, so it's likely to be another Kazaa – a privacy-interfering, corporate-owned damp squib that only folk who don't know better are likely to use.

WISE UP

So just where are the more savvy going for their copyright violating freebies? Well, those who love their music have found Soulseek to be a fine provider, if lacking the speeds of BitTorrent et al. But the dedicated movie and software pirate is back on newsgroups and IRC, systems complex enough to deter the average bear. For the time being, the Powers That Be aren't wading into that text-based quagmire – they're still after BitTorrent. The MPAA and RIAA are employing the services of 'digital tracking' firm BayTSP, whose FirstSource software claims to be able to identify the person behind the original upload of a given torrent. If it works, it could swiftly mop up many major uploaders and heavy users still sticking a rather large knife into the filesharing community's ribs. www.baytsp.com



Don't let your hard drive turn up as Exhibit A.



Jeremy Laird
SHAKEN NOT STIRRED

Could it be PDA nirvana, at last?

First a confession: I've prophesied the arrival of the ultimate multimedia-capable, PMC-whipping PDA on several occasions. You know, one with a razor-sharp VGA screen, Intel's swanky new Xscale CPUs and a next-gen video chip with the gumption to handle DVD-quality video files.

In reality, that messiah of PDAs has remained elusive, mainly due to a dearth of those all-important mobile video processors. But not any longer.

Finally, Dell has delivered on the promises we've been making for months. For sure, the new Axim X50v (see p76 for our full review) is not perfect. Actually, it's thoroughly infuriating in some respects, but not all of them are down to Dell's design incompetence. But, the combination of 624MHz Xscale CPU, lush VGA screen and Intel's new 2700G video chip really does offer an impressive visual treat.

PMCs with QVGA screens (that's just about all of them, then) simply don't compare. Not that you need to tell that to anyone at PCFormat Towers – I've been tearing around with the X50v, boring half the building to death with how wonderful I think it is.

Gearredup

THE HARDWARE ON OUR MOST WANTED LIST



A touch of colour

Available in green, red and blue, its UV paint coating, "gives off a shining waxed look and prevents scratches that ruin the appearance of the PC." Apparently.

Easy access

The side swivel door is a tool-less design, permitting access without the hassle of screws and screwdrivers.

Open sesame

The Vento's front panel is spring-loaded and slides upwards at the mere touch of a button.

Stay cool

Heat flow is managed with an 8cm fan at the front and 12cm unit at the rear.

Carry cases



Asus Vento

Price £110 Available Now Web www.microdirect.co.uk

Fancy an Alienware PC but can't afford one without packing Granny off to the glue factory? Well, Asus, maker of all kinds of quality PC-related kit (including Apple's ineffably lush alloy notebooks) may have just the thing. The new Vento ATX chassis treads the same moulded-plastic path as Alienware's premium PCs, but we think it has the edge in terms of spit and polish. In truth, Alienware's PCs have never really buffed our bits. They're a little too 'frag-happy,

oil-skinned teenager' when our mind's eye sees 'in-the-know, techno-chic icon' when we look in the mirror (forget the reality). We prefer the flush-fitting Storm Trooper vibe Asus has achieved.

On a practical note, the Vento sports a clever hinged front panel that swings upward rather than sideways (so it doesn't send bits of desktop furniture flying), plenty of cooling and expansion opportunities, and a choice of three colours. **ESSENTIAL**

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COMES AN EVOLUTION IN THE GENRE

IMMORTAL CITIES CHILDREN OF THE NILETM

"A beautiful city builder
that threatens to dwarf the
management monuments
of the past."

PC Gamer

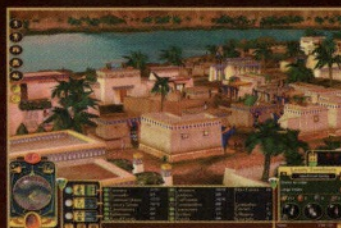
"...stunning 3D
environments acting almost
like a living city..."

PC Format

OUT NOW



Features a true 3D graphics engine,
which allows you to explore the world
you have created.



Intuitive controls designed to suit your level
of experience.

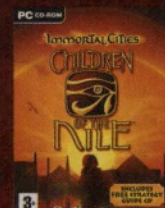


Unique behavioural technology means that
subjects act and react realistically to the
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Get up close and personal with your
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Nobody said being Pharaoh was going to be easy. Like it or not, your people have minds
of their own. Only by keeping them happy and earning their respect can you ever hope to
create your own thriving 3D society, empire and dynasty.



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www.children-of-the-nile.com

FWD>>
FWD>>

Strange things lurk online – be careful out there



1 The men of this charming American backwards town look forward to

the spring because that's when all the hot chicks start to bare their midriffs – whether they mean to or not...

2 Thanks to the internet, we've



managed to settle another office debate. Both the chicken and the egg were

predated by antiquated vending machines, packed with poultry based goodness.

3 Is your child listless and unattentive? Hanging with the wrong crowd? If he also believes that savannah



beasts can pilot aircraft, he may well have been tucking

into this delicious fare.

4 In the face of cut backs, the NHS has cut funding to several departments. However, the increase in applications to medical school has continued to



rise, for reasons that could be explained by this new machine...

The webpages

NEWS FROM THE WEIRD END OF THE NET



VoIP: Has staved off regulation in the US, for now.

VoIP victory

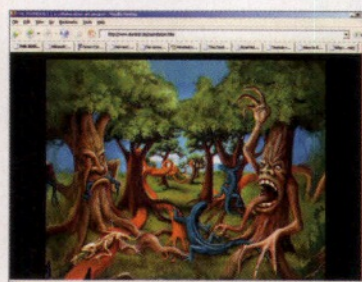
There's no such thing as a free lunch, but there are free internet phone calls

The Federal Communication Commission in America doesn't often make sensible decisions. It's currently

attempting to enforce new decency rulings on American television, fuelled by the innocence-destroying image of Janet Jackson's breast during the Super Bowl and U2 singer Bono's four-letter expletive, both on network television. Astonishingly, American cable channels are now paying indecency fines *before* showing uncut films or dubious content.

However, despite this recent floundering, the FCC's November ruling that individual states may not regulate Voice over IP technology has recently been upheld by the Missouri federal appeals court. Who? What?

VoIP – the technology that we've made something of a big deal about this month, is the innovation that



Infinity THE ZOOM QUILT

As far as collaborative art projects go, this is one that really deserves to have the term applied to it. A total of 15 artists have contributed to this seemingly infinite painting that is almost impossible to describe using words alone – even for gifted journalists such as ourselves. Nevertheless, this is our attempt to do so:

The static image on screen can be clicked upon, and then the viewer can zoom in or out of it using the mouse. Dragging out causes the smallest details in the centre of the picture to move toward you, essentially pulling you 'into' the image, allowing you to see more detail further in. This continues until what had been in the middle is now framing the image, with new details appearing from within. For ever. There are no delays, no visible seams and no cheats.

Perhaps this swirling, scrolling piece of web-based trickery really does defy explanation. We suggest you just go and look at it – it's pretty astonishing.

www.duracel.de/zoom/zoom.htm



Sportsmanship HARVARD SUCKS

Yale and Harvard, two of America's leading universities, don't much like each other. Their rivalry is similar in nature to that enjoyed by Oxford and Cambridge universities, and extends into all facets of college life at both institutions. With this in mind, you can understand why something was clearly amiss when a group of Yale students attended the Yale versus Harvard American football game dressed in Harvard 'pep team' shirts.

So what the hell was going on? The aim was to get 1,800 Harvard fans to declare something Yale's student body has held to be true for decades: that Harvard University sucks. A large number of cards were prepared, either white or red, and given out to the crowd on the Harvard side of the stadium, and Harvard's hapless students were assured that they would spell out "GO HARVARD" when held aloft. The spectacular results of this clever ruse can be seen in the video on the site. We bet the Harvard fans weren't impressed.

www.harvardsucks.org



Gardening DIE SCREAMING WITH SHARP THINGS STUCK IN YOUR HEAD

Garden gnomes are evil. If you have garden gnomes, then you too are evil. You are with them or against them, and if you're with them then you're against us. You might think they look cute. You might even think they 'brighten up the garden'. You are wrong. Not only wrong, but also stupid. And ugly. But most of all wrong. So very, very wrong. You wrong ugly idiot.

If you do have a garden gnome but are willing to admit to being such a stupid wrong idiot and want to make amends, there is something you can do. You can cause it to die screaming with sharp things stuck in its head.

The site contains many images of such gnomes, receiving the punishment they richly deserve. If you think otherwise, then it's not the gnome's head that needs the sharp object/screaming combination.

www.bifrost.com.au/hosting/gnomes/index.html

allows vocal communication to be made to anywhere in the world via the internet. In other words, it's the free way to speak to your great aunt Mavis in New Zealand. Possibly the most popular system offering VoIP technology is Skype (www.skype.com) but there are others offering similar, including the latest incarnation of multiple Instant Message client, *Trillian*.

Of course, such things upset those who make money from outdated technology like telephones, and so the only possible response in the face of obsolescence is to run screaming to the courts. But so far the technology has survived numerous attempts at corporate regulation.

The FCC still has its beady eyes focussed on the systems, and is laying down some guidelines. A consistent level of service is required, and it must ensure a guaranteed connection to the emergency services. Pessimists wonder, however, if it will only be a matter of time before the suits win, and the whole thing becomes a source



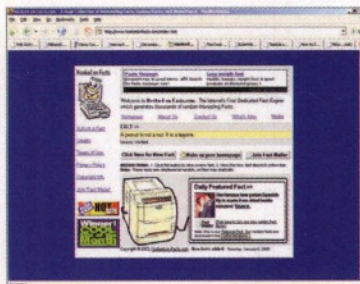
of tax revenue. You can be sure similar action will banish the technology in the UK, given time, so stake your VoIP claim today and make it harder for your free calls to be taken away. **PCF**

"US networks are now paying fines before showing explicit programming"

Forum Suprnova

Now that the legendary BitTorrent site is down, rumours are flying in all directions about what will happen next. The only way to keep up with developments is via their forum:

www.suprnovaforums.net



Information HOOKED ON FACTS

The speed of a typical raindrop is a brisk seven miles per hour. Women blink nearly twice as much as men. Ketchup was sold in the 1830s as medicine.

Obscure facts: they exist in that confusing middle-ground between 'useful' and 'useless'. They're almost entirely unhelpful on their own, but when combined in, say, an argument about something where the other person needs to be shown to be demonstrably wrong, little-known facts can become your friend. So, in order to win every argument you ever have, learn as many as you can, just in case it's the one you need.

This website is full of the obscure little blighters. For example: the Atlantic Ocean is apparently saltier than the Pacific Ocean; the average taste bud lives only 10 days before it dies and is replaced by a new one; a peanut is not a nut, it is a legume, and so on. The big question is: how have you got this far in life without this information at your disposal?

www.hookedonfacts.com/index.htm

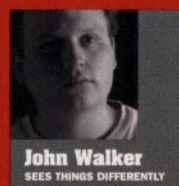


Countdown THE DEATH CLOCK

Apparently, this writer has 2,105,576,927 seconds left to live, at the time of writing. Monday 28th September 2071 is the exact day I'm going to shuffle off this mortal coil, according to this website. It's hard to know what's scarier: to see the precious seconds of a life ticking away, bringing the inevitable last breath ever closer; or to suddenly realise that death's chilly embrace won't prevent my seeing my 94th birthday.

The Death Clock requires some simple information – your date of birth, gender, attitude (optimistic, pessimistic, neutral), smoking status and BMI – and from this will generate you a slightly random, slightly accurate life span, delightfully presented as a countdown timer, in seconds. There's also additional, unavoidably morbid information about death and some useful tips which should ensure that you avoid it for a while. The site's large archives contain detailed information about how celebrities popped their clogs too. Cheer up if you like, but it definitely will happen.

www.deathclock.com



Copyright watch

As the BitTorrent clampdown bites, a brave few fight back: John Walker goes with the flow

Just case you haven't been keeping up, BitTorrent was the file transferring medium of choice last year. With the traditional P2P networks either in court, awaiting court, or resurrected as sanitised legal download services, those wanting to share online content with others stepped across to this more vague means of data transfer in their thousands.

While BitTorrent has a perfectly legitimate use as a means of transferring content, it is also used to illegally share music, films, and software. This means litigious bodies had to find a new way to attack, and as is so often the case it's taken them a long time to catch up. Of course they now have, and the result is that major sites providing the BitTorrent links that allowed users to find one another are beginning to close down. As reported last issue, Suprnova, probably the biggest and most widely used, folded over Christmas, with other smaller sites jumping ship with it. However, due to differing copyright

laws in countries where many of these sites are hosted and the legal grey area around BitTorrent links, some are questioning the validity of these threats. And a few brave sites aren't backing down (we mentioned The Pirate Bay's extreme response to cease and desist orders last issue).

Loki Torrent (www.lokitorrent.com) is being sued by the MPAA, and has decided to fight. "If you've ever benefited from this site or filesharing in general, now is the time to show your support," they say. "We are looking at a cost of \$30K per month in fees... Help us fight back and ensure your right to share doesn't end here."

It should be an extraordinary case, and one that Copyright Watch will follow carefully. They have managed to raise enough for the first month of the trial, but they need far more. Whatever the result, it will clarify how much control the corporations have. Meanwhile, the eXeem project is developing BitTorrent file sharing without a central website.

Fighting it out:
Loki Torrent takes
on the corporate
lawyers.



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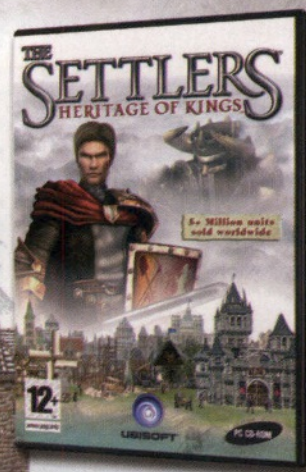


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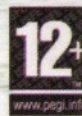


FEBRUARY 2005



PC CD-ROM

www.settlers.com



UBISOFT

Gameslatest

KEEP UP TO DATE WITH THE LATEST GAMING NEWS



Dan Griliopolous
IS A CHEAPSKATE!

Dan Gril discovers where to find cheaper games...

Following last month's Freeware feature, I've been dabbling with the cheaper side of gaming, looking at game providers scattered across the web, using its direct-to-consumer potential to avoid the costs of traditional publishing.

Matrix Games (www.matrixgames.com) is one of the best, with an exceptionally good selection of low-priced strategy games. More diverse, and a great distribution platform for independent developers, is Stardock (www.stardock.com).

Of course, Steam is attracting developers, and its promising MMO, *Pirates of the Burning Seas*, is on our most wanted list, but it's interesting to see other companies picking up on the trend. Sony is the latest to pitch in, with Station Publishing. The software itself is over-complicated and confusing at the moment, but with a little work Sony could be onto a winner. Its first move has been to take over Turbine's *Asheron's Call* series. Station already has a large stable of titles, and is promising its first proper release in the summer.

dan.griliopoulos@futurenet.co.uk

Project: Age of Empires III

Colonise the New World

DUE DATE Autumn 2005
PUBLISHER Microsoft
DEVELOPER Ensemble Studios
WEB www.ensemblestudios.com

It's been a short break since *Age of Mythology*, but Ensemble studios hasn't been resting on its laurels. It's been working on the next in the *Age of Empires* series, transferring the strategy game to the 16th – 19th centuries.

The difference between this and its progenitors? The colonial outlook. Like *Colonization*, you have a home city that benefits from your mission successes, and hence supplies better goods, troops and so on as you progress through North America and conquer the New World.

The single-player campaign follows the



It may not be quite 3D, but it still looks absolutely gorgeous – you'll want to move there.

different elements of the enormous tech-trees, a novelty that carries over into multiplayer. Ensemble has streamlined the resource

harvesting them depending on the location; fish by the sea, bison on the plains...

Although not essential for an RTS, the visuals are stunning too – unusual for a management sim – with pixel-shaders and bloom effects galore. The home city looks absolutely fantastic, from the loving couple ready to travel to the new world, to the bustling streets, filled with hawkers and soldiers, to the statuesque buildings

themselves, fatted on stolen gold and black labour.

On which note, we hope *AoE III* doesn't shirk mention of the decimation of natives and exploitation of slaves – the real foundation of the Americas. Too many games behave as if the routine exploitation of 'serfs' and their kin is acceptable; it would be warming to see a moral lead taken by a leading developer, and it would be a genuine development in gaming.

"The visuals are stunning too – pixel-shaders and bloom effects galore"

adventures of Morgan Black and his family as they travel through North America's history over 24 missions. Different actions will unlock

management aspect of the game, reducing the economic variables down to food, wood and coins, but varying the methods of

in the pipeline

It's time to suck down on the digital hubble-bubble of game scheduling!

OUT NOW!

Star Wars: Republic Commando

This month's best buy is, without doubt, LucasArts' stonking squad-based first-person shooter, *Republic Commando*. See the review on page 92 to find out just what makes it so special, and enter the elite world of the Star Wars military. www.lucasarts.com/games/swrepubliccommando

OUT SOON!

Star Wolves

Get your teeth into this lupine space RPG any day now, and become a freelance space hunter. The game involves spectacular 3D real-time battles, a non-linear storyline, and robot werewolves. Well, maybe not cybernetic polymorphs, but the rest sounds great. www.starwolves.ru/en

Playboy the Mansion

Various 'glamour models' will aid you in your quest to out-perv the Hef and re-establish Playboy as the premier top shelf read. www.arushgames.com/games/playboy



MARCH

Freedom Force vs The Third Reich

DUE DATE April
PUBLISHER Digital Jesters
DEVELOPER Irrational Games
WEB www.freedomfans.com

The comic warriors are back, this time taking on time-travelling Nazi forces

Time-travelling Nazis in deadly combat with Lycra-clad B-movie action heroes?! This is a job for... someone else!

Yes, lovers of crime and comic books, hold on to your replica Rocketman hats because your favourite superhero action-RPG (yes, after *City of Heroes*) is about to spawn a spin-off! Nuclear Winter, that commie crud with the cold heart, has returned with a new ploy to destroy Freedom Force and the free world. This time, however, he's not attacking just one spot; he's also being joined on the Western Front 50 years previously by Nazi Blitzkrieg and his Axis henchmen, and in the present day by the mysterious, sexy, Entropy.

As in the original game, you take control of the FF heroes, guiding them through the new engine, levelling them up with new powers, and winning over new team members with your rep. The new heroes include the overmuscled Aztec shaman Quetzalcoatl, the undead Tombstone, the jetpack- and machine-gun wielding ex-Hollywood Star Skyking, as well as Golden Age heroes, Blackjack and Tricolour.

There's also the return of series regulars Diablo, Man-bot and Mentor. And, of course, the tight-knit Irrational team has provided most of the voices themselves, so there's a selection of genuinely strange characters backing up the heroes. There's also a superior story-based multiplayer and a hulkload of easy-to-use mission tools, which FF's fanatical fanbase will seize on like super rats on supercheese.



Brother in Arms: Road to Hill 30

Ubisoft's wartime team shooter is looking to have innovative multiplayer, with players controlling AI squads through missions like the single player. www.brothersinarmsgame.com

Dark Age of Camelot: Catacombs

Rarely have we been so zonked by a game presentation, but the new graphics engine for DAOC, combined with the new areas and races, practically knocked us out. It's almost EQII quality. www.darkageofcamelot.com

Imperial Glory

A 19th century amalgamation of turn-based empire management and real-time land and naval battles from the makers of *Commandos* and *Praetorians*. www.imperialglory.com



The Sims 2 University

Your sons, daughters and alien broodlings will be able to get stoned, drunk and possibly go to a lecture in early March. http://thesims2.ea.com/about/ep1_index.php

Stronghold 2

To besiege or not besiege, that is the question. And the answer depends on thickness of walls, depth of wells, morale and food supply. www.fireflyworlds.com/sh2_index.php



SWAT 4

After a five-year hiatus, our favourite non-violent FPS returns, this time with some stonking set-piece scenes and hilarious multiplayer (CS gassing your buddies rocks) www.swat4.com/us

APRIL

Cossacks II: Napoleonic Wars

We have just seen beta code for Cossacks II, and we're very impressed – it will keep the most avid of warmongers content. Go back to the 19th century and control up to 64,000 individual troops in the first of the wars to end all wars... www.cossacks2.de





The Siamese spies pull off another daring mission.

Splinter Cell 3

DUE DATE Already out
PUBLISHER Ubisoft
DEVELOPER Ubisoft
WEB www.splintercell.com

Tom Clancy's latest should be hitting us next month, and it looks as if it will have the same hard-boiled global perspective as the previous titles.

This game's been blessed by a script from the pen of Peter Berg, director and writer for the forthcoming *Splinter Cell* film, due for release in 2006.

His plot posits a Far East confrontation between China, Korea and Japan, which seems to have been orchestrated by an information terrorist organisation, drawing in the US and Sam Fisher with it.

New to this incarnation will be a co-operative multiplayer mode, where operatives infiltrate bases in tandem, and a versus mode, much like that from *Splinter Cell II*.

Civilization 4

DUE DATE TBC
PUBLISHER Take Two
DEVELOPER Firaxis
WEB www.firaxis.com

"In *Civilization*, we have created a world with endless possibilities, that has been embraced by game players all over the globe," said Sid Meier, Director of Creative Development at Firaxis Games and Civ founder.

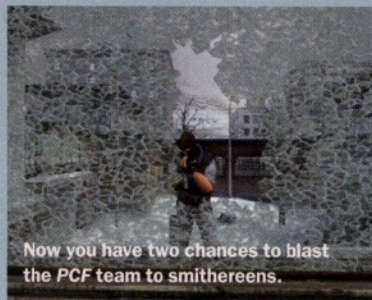
"With the upcoming addition of *Civilization IV*, our core fans and newcomers alike will enter a world of unparalleled scope and detail." So it sounds as if they've hardly started working on the game at all yet; they're probably still making the toolset.

Expect stunning 3D graphics, advanced multiplayer support, player created mods-scenarios, and all new civilisations, technologies and units. Also expect to be addicted for the next 30 years; a light play, this is not.

The Source of all fun

PCF sets up a second Counter-Strike Source server

Yes, we are still totally obsessed with our *CounterStrike: Source* server. Games Ed, Grl can't quite believe the addiction (being an old-skool *Team Fortress* player, he prefers *HL2 Deathmatch's* surrealistic toilet-bashing dynamic), but even he's been trying to pop a few noggins on the CS server. Trying being



Now you have two chances to blast the PCF team to smithereens.

the operative word, as the server's popularity means it's nearly always full.

So we've had a second server set up for you all to play on. Of course, having two identical servers would make it impossible to choose between them. Therefore, the new server will also feature (roll of drums) custom maps! Yes, you too can play on hand-crafted fan maps that appear on our coverdisc each month.

As ever, you'll be able to recognise members of the *Format* team by the 'PCF' tag in front of their names, and members of the forum Clan by the 'PCF*' user tag. Adam 'Cueball' Oxford and Jeremy 'Caboosemoose' Laird are regulars on the servers, and you'll find many forumites on there too, as well as our long-suffering admins Knifey, Jezreel, Rickydark, Batou San and Zeus.

Look for 'games2xs.net PCFormat Official CS Server' in your *CounterStrike: Source* server browser, and click 'Join.' You'll be stabbing and shooting faster than you can say "the sixth sick sheik's sixth sheep's sick."

Star Wars: Empire at War

DUE DATE TBC
PUBLISHER Petroglyph
DEVELOPER LucasArts
WEB www.lucasarts.com

Once the question was: 'Sod womprats, can we zap Ewoks?' Now the question is: 'can we kill Hayden Christensen?'

Battlefront may have been initially disappointing, but *Star Wars* has never seemed comfortable with RTS games. Until now, that is. *Empire at War* takes on both C&C and *Homeworld*, with forays into space combat, and strategically-rich land battles. With players controlling all the vehicles and units from the original films, a galactic conquest mode, and intense multiplayer, this might be the game you're looking for. **PCF**



AT-ATs should really be equipped with training wheels. But you know what they say: two AT-ATs are better than one.

Quotebox "We're creating creatures from scratch, so monkeys may not make it. If the choice is between Kong's cousin and a beholder, the fans will want the beholder."

Jay Watamaniuk of Bioware on *Neverwinter Nights 2*

APRIL

X2: The Return

A standalone semi-sequel to 2004's *X2*, this space-sim promises to be six times as large and a billion times more fun than the original, due to its community development.

www.x2thethreat.com



Empire Earth 2

Following man's development from amoeba to technological warrior, *EE2* will challenge *Rise of Nations* for the lunchtime RTS crown. And win, hands down.

www.empireearth.com

Perimeter: Emperor's Testament

Picking up from the fantastically weird and tricky *Perimeter*, *ET* will follow the psychotic Emperor's discovery of a new chain of Psychosphere worlds, and the lost Exodus frames. No, we've no idea what that means either.

www.kdlab.org/eng/projects



Grand Theft Auto: San Andreas

GTA San Andreas has just been confirmed for a June release for the PC, meaning that your personal recreation of the LA riots is only a stone's throw away. Prepare for a violent romp.

www.gta-sanandreas.com

WINTER & BEYOND

Galactic Civilizations II: Dreadlords

RELEASE DATE: Winter 2005
The sequel to the excellent *GalCiv* offers a more story-based challenge as the human race seeks allies to stave off the resurgent Drengin threat. Apparently.

Elder Scrolls 4: Oblivion

RELEASE DATE: 2006
Looking increasingly impressive, Bethesda's latest (in development since 2002) is shipping on PC and next-gen consoles.

SUMMER

LOVE IS IN THE AIR...

PCF Guide to... online dating

At the moment, only half the PCF team is connected to another human being through an emotional bond. The other half of us are mere shells of people. If you fit into that category, too, then you'll know this Valentine's Day was a miserable occasion. Spending the evening in watching TV and playing games is all very well, but we don't want to have to do it – we had no choice. What's the point in going out when all you'll come across is couples? So the time has come. Why don't you get out there and do something about it. And who knows, come next Valentine's Day, you could be thanking your favourite PC mag for these choice tips. Then again... **PCF**

Flower power

Nothing goes down as well as a bunch of flowers. They mean instant success. What woman (or new-age man) could turn down a lovely bouquet? A word of warning though: roses on a first date mean you're far too keen. Like we know what the hell we're talking about. www.interflora.co.uk

Select-a-date

This online dating lark doesn't have the stigma attached to it that it used to. Not everybody on there's a dog. There's ample chance to see the most awful picture people can find of themselves. Learn from their mistakes and make sure your picture's of a reasonable standard (there's always Photoshop). Do better than the rest at www.datingdirect.com

Idle chat

Of course, you can always use (shameless issue-related plug ahoy) your free PCF headset to chat to your intended using the wonders of Voice over IP. It's incredible, this internet stuff. www.sipgate.co.uk

Tone yourself

You need to look your best to meet potential mates. Hate the gym? Why not buy a treadmill? We found an excellent specimen for £370 on www.ebay.co.uk. Not too new, but with a top speed of 12kph not to be missed. Until you fall off the end, that is.

Gym time

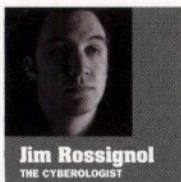
Yep, you too could spend obscene amounts of cash each month on a gym subscription that you never use. Perhaps you should. Otherwise you'll scare yourself with just how much beer money you're offloading to Fitness First or similar. Ah, and remember, gyms are great places to meet members of the opposite sex, though 90 per cent of them will doubtless be thoroughly unobtainable. www.fitnessfirst.co.uk

First contact

Instant messaging – it's the new (but actually rather old) craze. Once you've established contact with a potential man/woman/other, do make sure you give them a few minutes before asking them for a Hotmail address you can bug them with on MSN Messenger. Beware though: contacting a potential date more than twice an hour may make them think you're a stalker. Once is fine. www.msn.co.uk/messenger

A new interest

If you're just not attractive enough to hit it off with a member of the opposite sex, perhaps it's time you took up a new interest. So, get out there and try something new – you never know who you might meet.



Jim Rossignol
THE CYBEROLOGIST

Watchthisspace

CYBORG SOLDIER JIM ROSSIGNOL TALKS BIO-COMPUTING

Flying rat brains

Can a petri dish full of rodent neurones pilot a \$1 m fighter plane in a flight sim?

The 1999 sci-fi novel *Starfish* came up with the idea of 'smart gels' - living computers that were taught to pilot undersea vehicles or hovercraft. It seems its author, the talented Peter Watts, has followed the sci-fi tradition of coming up with a fictional idea that's only just ahead of the curve of reality.

The University of Florida's School of Biomedical Engineering department recently announced that it had connected rat neurones to an F-22 simulator and had

the 'smart gel' fly the simulated plane. "It's essentially a dish with 60 electrodes arranged in a grid at the bottom," said the University's Thomas DeMarse. "Over that we put the living cortical neurons from rats, which rapidly begin to reconnect themselves, forming a living neural network - a brain."

The 25,000 neurones were 'taught', via the array of electrodes, to fly the plane, just as Watts had foreseen in his novel. Initially the neurones could do little more

than cause the plane to drift, but as their neural network grew, so the neurones came to control the pitch and roll of the plane, guiding it through various weather conditions.

"If we can extract the rules of how these neural networks are doing computations like pattern recognition, we can apply that to create novel computing systems," said DeMarse.

Real world apps are a way off, but how long before rats are flying you on that package holiday to Madrid? www.napa.ufl.edu



Auditions for *Top Gun 2* are going well...

"The 25,000 neurones were 'taught', via the array of electrodes to fly the plane"

Robot painter

Can't find a use for your old industrial robot? Has he been outmoded down at the car factory? Well, then perhaps you can allow him a graceful retirement as an artist. The German art collective, Robotlab, have been buying and repurposing industrial robots to paint pictures, dance and DJ at clubs.

With portraits drawn on demand and several art exhibitions behind them, Robotlab's hope for 2005 is to have the robots' arms dancing to music composed by Kraftwerk.

<http://robotlab.de>

This month in Science March, 1954

The biggest event in science history took place on the 1 March, 1954 when Bikini Atoll in the South Pacific was incinerated by the first atmospheric test of the hydrogen bomb.

It's the thought...

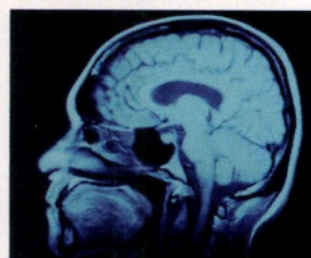
Quadriplegic man sends emails and plays videogames thanks to a new brain chip

Cyborgs of the future, integrated bodies, brains and computers seem to be constantly in the headlines these days, but the latter part of 2004 hosted some of the most significant advances so far. In Massachusetts, a 24-year-old quadriplegic man has been surgically implanted with a brain-chip complex enough to read the impulses of a hundred neurons at a time, allowing him to send emails and control his TV.

While there are numerous technologies for paralysed people to control computers with their eyes or tongue, such systems are severely limited and taxing on the user. Direct brain interfacing could offer more flexibility and freedom. The success of the BrainGate chip from US firm Cyberkinetics is one of the most significant future bio-tech inventions. It's 100 electrodes make it far more versatile than previous attempts at make brain-reading chips, and should soon be able to act in just the same way as a mouse does.

Nevertheless some experts have still voiced scepticism about the revelations, arguing that a genuine breakthrough is still yet to occur. Oxford University's Stephen Roberts said in science journal *Nature*; "Most of these devices work well on a small subset of patients, but there's a long way to go before getting them to work for the general population."

Prospective cyborgs can volunteer for clinical trials on the Cyberkinetics site. www.cyberkineticsinc.com



Brain chips are increasing in complexity as well as functionality.



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"THIS GAME'S NO CLONE, IT'S
IN A LEAGUE OF ITS OWN!"

— XBM magazine



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A luddite writes

So I'm a 'CRT-fancying luddite' (Supertest, PCF 169)? I need pixels above all else for CAD. I intend to buy an Iiyama Vision Master Pro 514 (£348 +VAT from Misco). That's 22 inches of 2,048x1,536 pixels at 88Hz. The nearest LCD in your test to this is the Viewsonic VP231WB at 1,920x1,200 for a whopping £1,379 – that's 27 percent less screen area for three and a half times the price. Which one should I go for? Hmmm... tricky.

DAVE TEEHAN
d.teehan@dl.ac.uk

And another...

Great mag, love it, etc... Have been a subscriber for four years, but I'm confused by a contradiction. In the review

of LCDs in PCF 169 we get this from Jeremy Laird: "If there are any remaining CRT-fancying luddites out there please, for your own sakes, get a grip of yourselves. When it's multimedia and gaming or general desktop work, the best LCD screens are now streets ahead."

Then in the Frontend section about the up-coming Superslim CRTs in PCF 170 we get this: "Yadda, yadda... flat panel monitors... yadda, yadda... small footprint. Yes, it's all very true, but here at PCF we resolutely stand by our humungous CRT monitors whenever we can find the space, as they offer far better image quality, especially for the latest games and design work."

So, PCF, which one is it to be?

Personally, I'll remain in the CRT camp for gaming for now. Besides, it keeps my bedroom nice and warm.

ROB JONES
rob@ripnomad.fsnet.co.uk

PCF says The very best LCD screens are great, but expensive. And PCF staffers are paid in lines of game code. So yes, Jeremy is right. There's no point of principle against LCD technology, but at the same time a CRT offers better value for money.

Printer surprise

I've been a subscriber to PCF for a while, and have always relied on your reviews when buying equipment. I treated myself to the Epson RX420, which achieved the highest score in your test. So imagine my horror when I opened it and found that it didn't come with a USB cable. That's like selling me a car with a tyre missing! It's useless until I go out and buy one!

I'm extremely hacked off with Epson for not supplying one, but even more hacked off at you lot for not mentioning such a glaring omission!

And before you say it, yes it is written on the outside of the box, but in print so small you need a magnifying glass to read it!

ALLAN CURRAN
agc1233@hotmail.com

PCF says It's less an oversight than a long-established tradition, we're afraid. Printer manufacturers have been forcing buyers to shell out for separate cables for years. We suggest a protest on the streets of London against this insidious practice.

Gamble ramble

I'd like to offer Nick Merritt some advice on playing poker on the internet (Diary of an Online Gambler, PCF 170) and stop him throwing his money away.

- 1) Stop playing. No really.
- 2) Go to Amazon and buy *Winning Low Limit Poker* by Lee Jones. This is the bible of internet play (ignore the books on internet poker) as virtually all players are low-limit players.
- 3) If you must carry on playing, stick to the \$5 single table tournaments while you're learning. You'll get an hour or so's play for your \$5, and will win money if you finish in the top three – and a finite loss (\$5) if you don't.

NIK H
Email address supplied

Nick says Thanks Nik, but I was neither trying to write a poker tutorial, nor demonstrate how brilliant I was. I was trying to review the experience of playing poker online from a broad perspective. In future, if I write such self-aggrandising nonsense, I'll be sure to give you a call. PCF

Mail of the month

Goodbye Gordon?

Alright already, I'll buy the damn thing, fail my college course, go bankrupt, get a divorce, and turn into a skulking denizen of the computer-under-the-stairs until I've finished it – but please would it be possible to devote a whole page in the next edition of PCF (of which I am, of course, an avid reader) to not mentioning *Half-Life 2*?

Let's examine PCF 170, shall we? *Half-Life 2* is mentioned on the cover and on the DVD. There's even a book all about it taped to the front of the magazine. Look inside. The game is mentioned in the index and the editorial. Alec Meer talks about it in Front End, and on the opposite page it features in Hot>Not.

I could go on and on, as do you, all the way to the last page where it's the sole subject of Restart. For God's sake, you even have a favourite headcrab – a favourite????

Don't get me wrong, I loved *Half-Life*, and will no doubt name my next son Gordon after I have experienced the game's second incarnation. It's just that

I remember when PCF had so much more to offer its readers, and wasn't sponsored by Valve.

Here's my challenge – how about having ten or fewer mentions of *Half-Life 2* next edition? You must have something else to talk about?

CHRIS BATH
Macclesfield

PCF says Well, it is a very good game, you know. We have calmed down a bit now, though. In fact, you're the first person to mention it this issue.



Email and win

This month, the writer of our Mail of the Month receives this fantastic 16-in-1 USB2.0 card reader from Trust. It's perfect for swapping music or photos to and from memory cards without lots of fiddly wires.

Write to PCF now! Send us your thoughts and concerns about our magazine or your PC, or gaming in general, and we'll do our best to see the world hears your voice.

pcfmail@futurenet.co.uk

ISSUE OF THE MONTH

For more feedback on this month's debate, turn to page 178

Top threads

The best of our forum. Pop over to <http://forum.pcformat.co.uk> to have your say

VENI, VIDI, NO VICI Games: Rome – Total War

While playing as the Romans attacking the Britons, I'm sure I've seen the Britons with slingers that throw human heads.

But playing as the Britons now, I've yet to come across this unit. Not only this, I'm also sure the Britons had archers, but I've yet to come across an archer unit, except the Chariot Archers. Any ideas?

GI JOE

Not sure about the head slingers... But don't you get Longbowmen when you upgrade to include Wales? You find them in some European

cities too, as I recall. I'm not sure as I've only played through the game once and then had to uninstall it as I found I had to eat and sleep.

POLITO 45

The Britons are maybe the toughest troops to get started with: the cavalry isn't great and the infantry isn't particularly strong, but the ranged attackers are good enough.

The key thing to remember with all the barbarian factions is to be aware that a lot of your troops have a very high fear rating (infantries, war chants and chariots being prime examples). Using those to make the enemy rout,

then getting your cavalry to clean up the mess, is a very effective method.

HIGGINS

TOP DOGS

Chit chat: Say hello to your new mods

Say 'hello', 'congratulations' and 'please don't ban me' to your new moderators, David Way and Becky!

CUEBALL

I knew them before they were famous!

BLAK

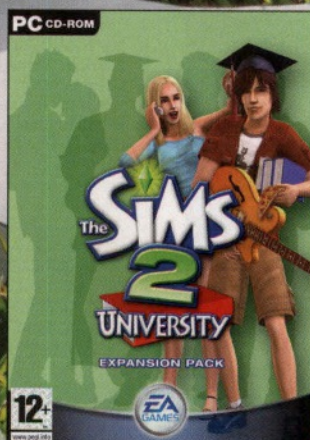
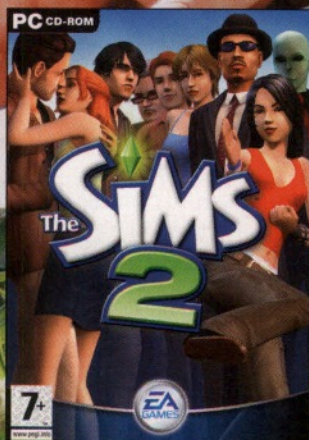
Sensible choices, I feel – good luck in the new job.

GNI

Congrats guys. I assume you'll be accepting bribes?

NEODUDE

How will you spend your time at college?



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**"The SX2P is
as desirable a
machine as we've
ever seen"**

gold
PCFormat

Sony VAIO VGN-S2XP
£1,799

Manufacturer Sony Web <http://vaio.sony-europe.com>

90%

If you have a friend who calls you geeky for suggesting that computers can be sexy, we recommend that you show him this notebook. The S2XP is as desirable a machine as we've ever seen. Sony has packed in an incredible amount of top-notch technology, making that price tag look like small change, and bringing a *MobileMark 2002* score of 159.

The full Centrino triumvirate is present and correct, in the form of a 1.8GHz Pentium M processor, the 855PM chipset and 802.11b/g Wi-Fi. You also get an 80GB hard drive and a DVD-RW. As you'll see, though, this line-up is pretty standard across all ultra-portables. What sets the S2XP apart is its dedicated GPU. In one foul swoop, Sony has dispelled the myth that you can't fit a dedicated graphics card inside a mobile notebook, sliding a Mobility Radeon 9700 into this machine's AGP interface. This is the only machine on test that managed to run *3DMark 2005*, and it also achieved a more than respectable 2,628 in *3DMark 2003*. This extra resource doesn't seem to have too much effect on the battery life either; a lifespan of three hours 25 minutes is commendable.

We can't leave you without mentioning the X-Black screen. We've always been fans of this technology, and the S2XP's 13.3in WXGA display is as clear and bright as its predecessors. It rounds off an absolutely superb package.

Rock Pegasus-TL**£939**Manufacturer Rock Web www.rockdirect.com**82%**

Rock makes big, beefy, desktop replacement notebooks, with full-size keyboards and 17in displays. Everyone knows that. Except now that's not true – it also makes the Pegasus-TL.

This diminutive animal is easily the cheapest machine in our group. To Rock's credit, though, it's difficult to see where the cost-cutting has occurred. The full Centrino line-up, a 60GB hard drive and a DVD+/-RW is hardly the spec list of a budget notebook. It's somewhat surprising, then, that the system performance doesn't quite match up to the fastest rivals. This is reflected in a *MobileMark 2002* score of 118.

We're willing to overlook this slight sluggishness, though, because this is arguably the most mobile of our five laptops. Quite apart from the size of the chassis, a battery life approaching four hours is stunning when you consider that the Pegasus isn't even running an ultra-low-voltage processor.

Even better, there's actually some innovative technology hidden away. Look hard at the photograph, and you'll see a small 'P' button above the keyboard. Press it when the system's powered down, and you'll boot a Linux-based media player, providing access to your music and video. Give it a push from within Windows, though, and you'll enter 'Stealth Mode'. Difficult as it is to believe, this isn't anything to do with *Splinter Cell*. In fact, it's a facility that under-clocks the CPU, enabling you to sacrifice performance for extra battery life – an intriguing addition to an already interesting package.



**top
gear
PCFormat**

JVC MiniNote MP-XV841**£1,526**Manufacturer JVC Web www.jvc.co.uk**69%**

We feel like bullies picking on this tiny machine. In a group test of ultra-portable notebooks, the two most important factors have to be weight and battery life. The dinky MiniNote is top of the pile in both respects, combining a 1.5kg frame with a superb four hour 30 minute lifespan. However, JVC has concentrated so hard in these areas, that it has fallen short in others, making a £1,500 price tag look a touch hefty, however cute the chassis looks.

So what's missing? Well, there's no dedicated graphics card, but the integrated Intel 855GME option is hardly a novelty in this company, and a *3DMark2003* score of just 118 is to be expected. More worrying is the omission of a DVD-RW drive; even the cheapest rivals in this group have pulled off that trick. Finally, the ultra-low-voltage 1GHz Pentium M processor (combined with 256MB of DDR333 RAM) may be good news for the battery, but it falls short in terms of application speed, as a *MobileMark* score of 114 will testify. We should also mention that the 40GB hard drive is the smallest on parade here.

802.11b/g Wi-Fi compatibility is a bonus, and you also get a fairly tasty software bundle. All the same, a below-average display and a decidedly uncomfortable keyboard make even basic word-processing something of a chore. If you want the lightest, longest-lasting notebook, this is it, but beware – those attributes come at a price.

TESTED!**Sony
VAIO VGN-S2XP****£1,799**

The perfect combination of style and substance. The group's only discrete GPU feeds a gorgeous XBlack display, and yet battery performance is still excellent.

**Rock
Pegasus TL
£939**

The cheapest machine on test is also one of the most innovative, thanks to a 'P' button that provides access to a Linux-based media player and a power-saving 'stealth mode'.

**JVC
MiniNote
MP-XV841****£1,526**

This is the smallest notebook on test, and features the best battery life, but it doesn't justify the hefty price tag.

**Hi Grade
Notino
C2200****£1,174**

Hi-Grade has put together a very similar machine to several others at a far lower price, and the C2200 fared well in our speed benchmark.

**Asus
M5863N****£1,409**

A sub-90-minute battery life is simply not good enough in an ultra-portable group test. Application speed is very impressive, but do you really want to edit video on the train to work?

Are you a wanderer?

Fat or thin, briefcase or brick?
Russell James can eat five thin and lights without ruining his appetite, lets see the results...

At first glance, a group test of ultra-portable laptops may seem like a strange idea. After all, all notebook PCs are supposed to be portable, aren't they? Well, that may have been the case five years ago, but these days the notebook form factor is playing host to a bewilderingly wide range of machines, many of which are about as mobile as Emile Heskey. This means that if you actually do want a machine that you can carry around with ease, you have to choose carefully.

As long as you're willing to spend over £750, the first thing you should look for on a portable PC is the rather fetching pink and blue Centrino logo. This provides a guarantee that the notebook uses Intel's full mobile platform: a Pentium M processor, Wi-Fi networking and the 855 or 915 chipset. There are other set-ups that provide much of the same functionality, but for guaranteed top-notch performance, you can't do any better than Centrino.

Still, every notebook manufacturer has at least one Centrino-branded model, and some PC makers boast five or six. It's therefore not enough simply to walk into PC World and demand a Centrino machine. You need to take a close, informed look at which companies make best use of the technology, and

chose a laptop which best suits your needs.

Two of a laptop's attributes relate directly to mobility: chassis dimensions and battery life. As far as the form factor issue goes, you'd be surprised how much even supposedly ultra-portable machines can vary. Unless you're built like a professional wrestler, we suggest that you look for something around 2kg. It's a similar story for battery life. It's a common belief that all Centrino laptops boast superb battery performance; that's far from the case. While some models can still maintain power long past the four-hour mark, others die within 90 minutes. If you're a constant traveller, you shouldn't accept anything much under three hours.

One aspect that varies just as much is screen quality. Whereas six to eight months ago all laptops featured the same 1,024x768 resolution the recent trend for increased convergence has led several manufacturers down the widescreen route. After all, along with the keyboard, the screen is the part of your computer that you use the most; it's important that you get these two components right.

HOW WE TESTED

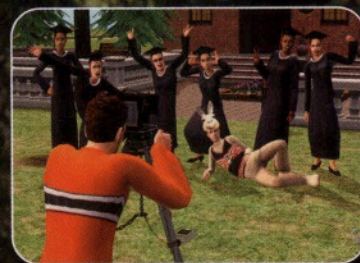
Benchmarks explained

In order to distinguish between similar machines, we run the MobileMark 2002 benchmark. This simulates running several apps at once, testing how quickly the system responds.

MobileMark 2002 also gives us an objective way in which to test battery life. The benchmark runs continuously until the battery is completely exhausted, keeping the processor and hard drive active. When we plug the

machine in and re-boot, the MobileMark result is accompanied by a battery life rating in minutes.

Few ultra-portable notebooks have a discrete graphics processor yet, and even those that do can't match the 3D performance of a desktop. We focus instead on 3DMark 2003, which tests frame rates within a number of game environments, and then gives a final score at the end.



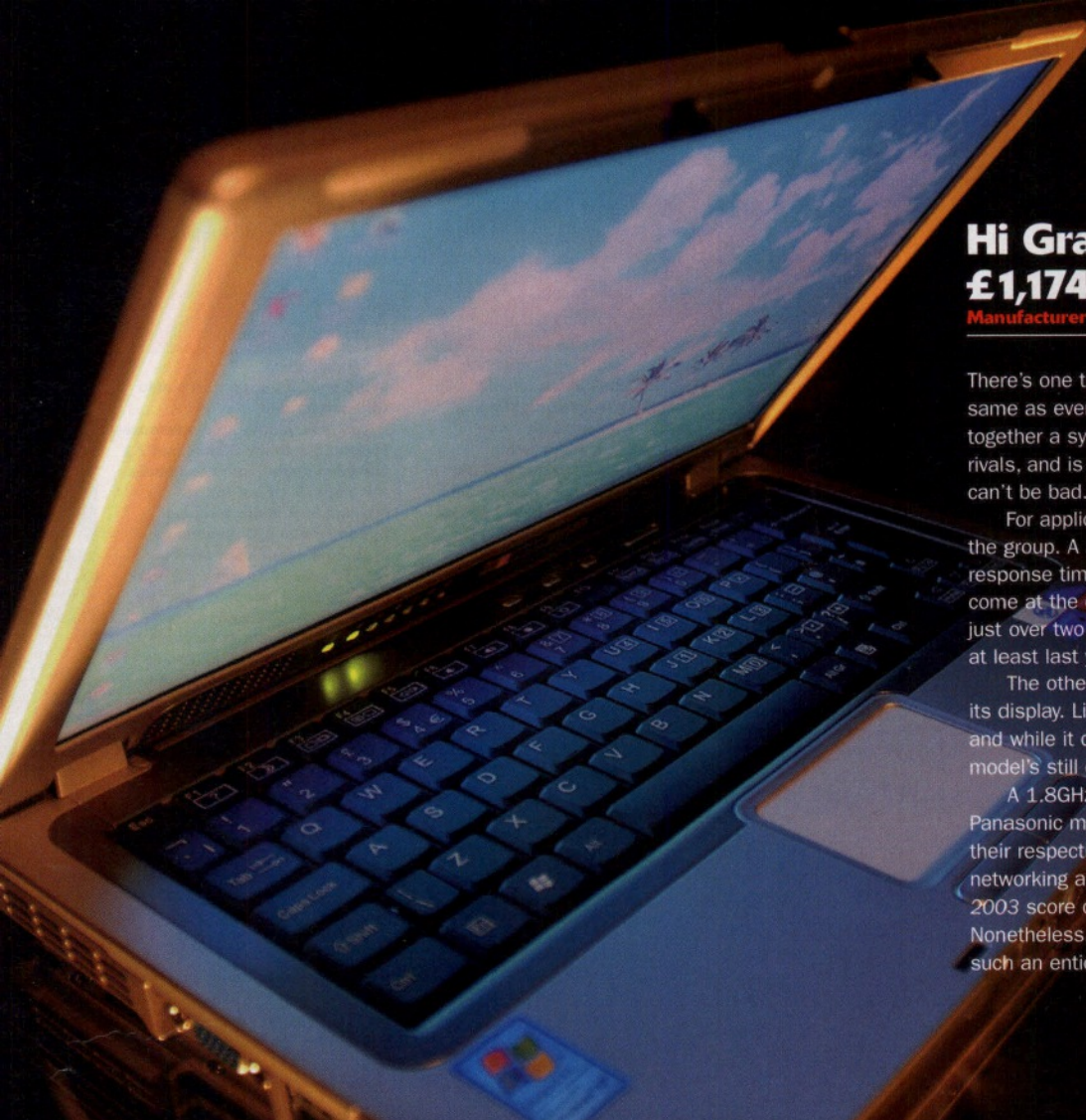
Party with new friends, join a rock band, cram for exams or flunk out early. Will you satisfy your Sims' college urges or take pleasure in denying them? The choice is yours.

How will you play with life?



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Challenge Everything™



Hi Grade Notino C2200

£1,174

Manufacturer Hi Grade Web www.hi-grade.co.uk

74%

There's one trick that will win you fans in any market: offer the same as everybody else at a lower price. Hi Grade has put together a system using many identical components as its rivals, and is offering it at a far lower price than most. That can't be bad.

For application speed, this is one of the best notebooks in the group. A *MobileMark* score of 182 represents quick response times across the board. Vitally, this pace doesn't come at the expense of too much longevity; a battery life of just over two hours can't be described as extensive, but it will at least last you an average train journey.

The other factor that enables this machine to stand out is its display. Like Sony, Hi Grade has opted for a WXGA panel, and while it can't be compared to an X-Black screen, this model's still extremely bright and clear.

A 1.8GHz Pentium M, an 80GB hard drive and a 4x Panasonic multi-drive DVD-RW all lean towards the high-end of their respective lines, but they're hardly revolutionary. Wi-Fi networking and integrated Intel graphics (mustering a *3DMark 2003* score of 120), meanwhile, are ubiquitous in this line-up. Nonetheless, the fact that Hi Grade has put it all together at such an enticing price is highly impressive.

Asus M5863N

£1,409

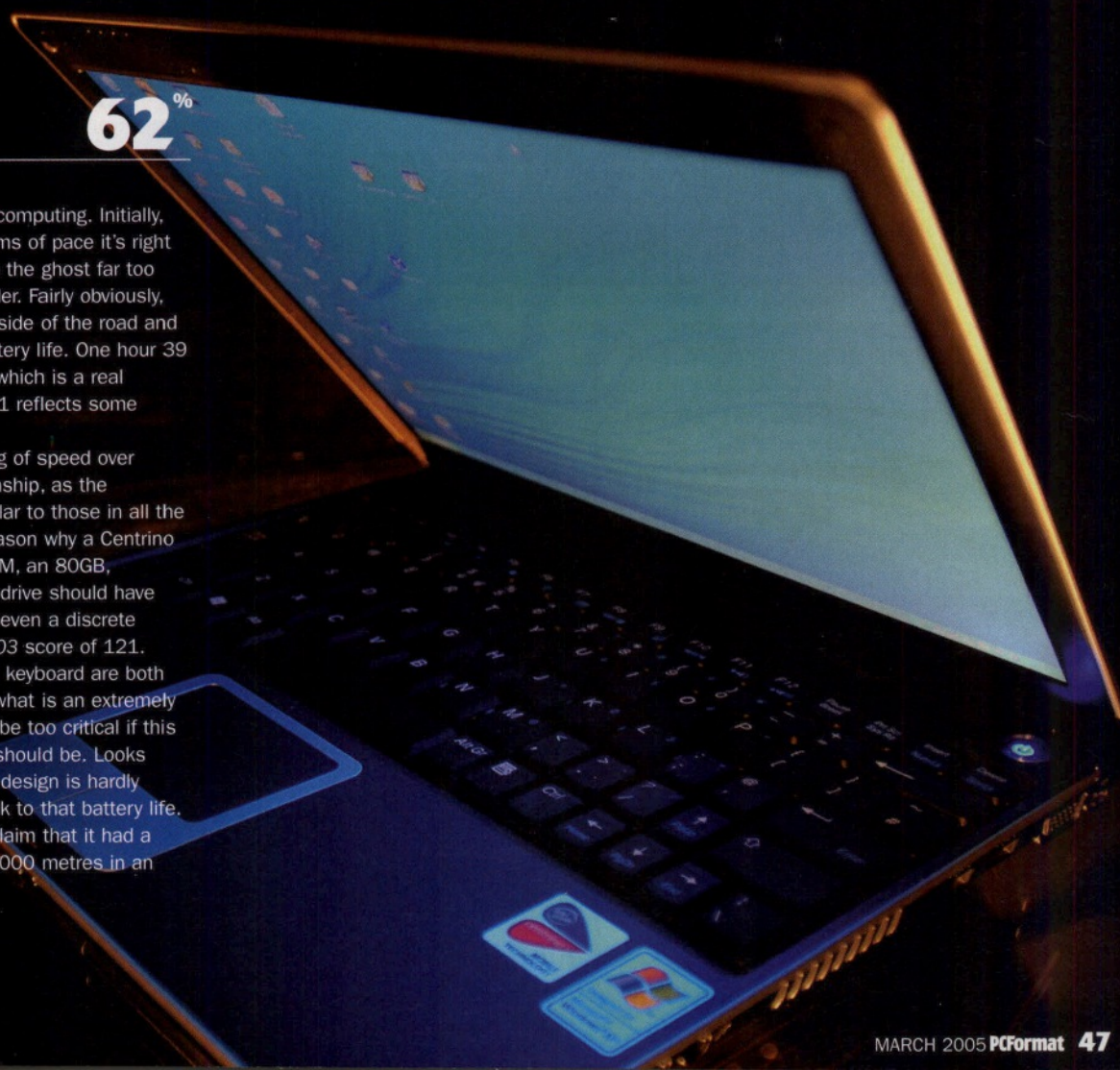
Manufacturer Asus Web www.asus.com

62%

This is the Paula Radcliffe of mobile computing. Initially, its performance is superb, and in terms of pace it's right at the front. Unfortunately, it gives up the ghost far too early to be considered a real contender. Fairly obviously, the M5863N doesn't fall over at the side of the road and start crying. We're referring to its battery life. One hour 39 minutes is hardly a marathon effort, which is a real shame, as a *MobileMark* score of 191 reflects some tremendous system performance.

The reasons behind this favouring of speed over stamina lie entirely in Asus' workmanship, as the M5863N's components are very similar to those in all the other machine on test. There's no reason why a Centrino notebook running a 1.7GHz Pentium M, an 80GB, 4,200rpm hard drive and a DVD/RW drive should have such a lousy battery life. There's not even a discrete graphics card, hence the *3DMark 2003* score of 121.

The 12.1in display and the small keyboard are both mediocre. Still, that's no surprise in what is an extremely lightweight chassis, and we wouldn't be too critical if this was as mobile a product as it really should be. Looks aren't a problem either, although the design is hardly revolutionary. We just keep going back to that battery life. We're now waiting for this laptop to claim that it had a mysterious illness, and enter the 10,000 metres in an attempt to prove itself.



Conclusion

The more things change, the more they stay the same

The popularity of Centrino has led to a degree of standardisation in the notebook component market. This is reflected in our test; if you read the features list quickly, you could almost think we had copied the entries from the first column across the next four.

These results suggest that more creative thought is now being invested in external design. If we had tested five ultra-portables a year ago, we would probably have found that they all looked similar. Now, we're seeing some highly original form factors, as manufacturers struggle to make their machines as light as possible without sacrificing features.

The most creative chassis designer, Sony, has also added some imaginative

touches in other parts of the system. Which is why it has walked away with the top prize. The XBlack screen technology has yet to be matched by any rival. We're equally impressed by the fact that Sony has been able to cram a discrete graphics processor into one of the thinnest, lightest chassis on test.

It will be interesting to see how Intel's Sonoma technology affects innovation. The target audience for the ultra-portable, travelling businessmen, have no need for a 533MHz front side bus or a 2.13GHz processor, so manufacturers could face a battle convincing them of the benefits. The introduction of PCI Express cards is another thing to look out for this year. **PCF**

Centrino all over

Next-gen chips revealed

You can't talk about mobile computing without mentioning Centrino. We were all very excited, then, when Intel announced six months ago that it was to refresh and improve this architecture with a new Centrino line-up, 'Sonoma'.

By Intel's own admission, this isn't a major revamp of the Centrino components; it's a slight adjustment to them.

The Sonoma's mobile 915 chipset is available in PM, GM and GMS flavours. The PM definition refers to the plain version, while the GM includes new integrated graphics. We're all pretty fed up of the appalling Intel Extreme Graphics, and Intel claims that its successor, GMA900, improves performance

by up to 132 per cent. It's also DX9-compatible.

The new 'Axalia' audio features support for Dolby Digital and 7.1 surround sound, and can handle separate channels for independent audio streams. Speed freaks will also be pleased to learn that Sonoma boasts a 533MHz front side bus, bringing Intel into line with the best Athlon 64 architecture.

The 915 chipset is compatible with DDR2 memory (up to 2GB), Serial-ATA hard drives, Gigabit Ethernet, and PCI Express, for both graphics and peripherals.

There's no doubt that Centrino is still your best bet for mobile computing, but it will be at least a further 12 months before we see another major step forwards.

IN DETAIL

Nothing escapes our attention

£939

Rock Pegasus-TL

82%



£1,174

Hi Grade Notino C2200

74%



£1,409

Asus M5863N

62%



£1,526

JVC MiniNote MP-XV841

69%



£1,799

Sony VAIO VGN-S2XP

90%



	Rock Pegasus-TL	Hi Grade Notino C2200	Asus M5863N	JVC MiniNote MP-XV841	Sony VAIO VGN-S2XP
CPU	1.7GHz Pentium M 735	1.8GHz Pentium M 745	1.7GHz Pentium M 735	1GHz Pentium M 723	1.8GHz Pentium M 745
RAM	512MB DDR333	512MB DDR333	512MB DDR333	256MB DDR333	512MB DDR333
Core logic	Intel 855GME	Intel 855GME	Intel 855GME	Intel 855GME	Intel 855PM
HDD	60GB Hitachi (7,200rpm)	80GB Fujitsu (4,200rpm)	80GB Hitachi (4,200rpm)	40GB Hitachi (4,200rpm)	80GB Fujitsu (4,200rpm)
Drives	8x Lite-On DVD+/-RW	4x Panasonic Multi DVD-RW	2x Panasonic Multi DVD-RW	8x Panasonic DVD-RW	2x Panasonic DVD+/-RW
Graphics	Integrated Intel 855GME	Integrated Intel 855GME	Integrated Intel 855GME	Integrated Intel 855GME	ATI Mobility Radeon 9700
Screen	12.1in WXGA (1,280x800)	12.1in WXGA (1,280x800)	12.1in XGA (1,024x768)	8.9in (1,024x600)	13.3in WXGA (1,280x800)
Sound	Integrated Intel AC'97	Integrated Intel AC'97	Integrated Intel AC'97	Integrated Intel AC'97	Integrated Intel AC'97
Speakers	Stereo	Stereo	Stereo	Stereo	Stereo
Comms	802.11b/g Wi-Fi, Ethernet	802.11b/g Wi-Fi, Ethernet	802.11b/g Wi-Fi, Ethernet	802.11b/g Wi-Fi, Ethernet	802.11b/g Wi-Fi, Ethernet
Ports	2x USB 2.0, 4-pin FireWire	2x USB 2.0, 4-pin FireWire	3x USB 2.0, 4-pin FireWire	2x USB 2.0, 4-pin FireWire	2x USB 2.0, 4-pin FireWire
OS	Microsoft Win XP Home	Microsoft Win XP Home	Microsoft Win XP Pro	Microsoft Win XP Pro	Microsoft Win XP Pro
Other software	Ability Office, WinDVD	Ability Office	PC-cillin 2002, McAfee	WinDVD 5, Norton, Studio 9	Photoshop Elements 2
Size	292x230x25mm	297x205x25mm	274x233x29mm	235x214x43mm	313x225x35mm
Weight	2.2Kg	1.8Kg	1.6Kg	1.5Kg	1.9Kg
Carry case	Yes	Yes	Yes	Yes	No
Mobilemark2002	118	182	191	114	159
3DMark 2005	n/a	n/a	n/a	n/a	739
3DMark 2003	125	120	121		2,628
Battery life	3 hours 45 minutes	2 hours 11 minutes	1 hour 39 minutes	4 hours 30 minutes	3 hours 25 minutes



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Please note, the headset is not available with US editions of PCFormat

Free calls forever!

**£14.25 for a five minute call to
Burkina Faso? Not any more –
Luis Villazon writes the obituary for
the home telephone as we know it**

Let us start with the humble phone network. It is a century-old, wire-based, circuit-switched system designed to carry speech. Now watch as we add a clever box at each end to modulate a carrier tone across this network so that digital data can be transmitted, albeit slowly. Next, to boost speed, we upgrade these boxes and replace all the switching equipment on the network so that the data can be transmitted at much higher rates using all of the available signal bandwidth. Finally, and with a dramatic flourish, we add some more hardware and software at either end to convert our speech into digital data and back again so that it can be transmitted over this same network that was originally built to carry speech anyway. This is the genius of Voice Over Internet Protocol, or VoIP.

LET'S TALK NUMBERS

On the face of it then, VoIP appears to be a gross over-complication of a perfectly mundane service by wildly unnecessary use of technology. And to be fair, when it was invented in 1995, that's pretty much all it was. It was only later that the world realised exactly what it was that made Voice Over Internet Protocol an invention that could change the world – VoIP phone calls are completely free.

This isn't entirely down to it being so new a technology that existing telecoms giants haven't

**"Voice Over Internet
Protocol could
change the world –
VoIP calls are
completely free"**

Silver Service

It's not how much bandwidth you have that counts, but how little you use...

QoS, or Quality of Service, doesn't refer to the audio quality of the speech in a VoIP conversation, at least not directly. Rather, it is another set of protocols that attempt to guarantee sufficient minimum bandwidth for the audio stream to ensure that the packets arrive at the other end fast enough to be processed in real time. Virtually everything else that travels over the internet has to make do with the 'best effort' transmission that ordinary TCP/IP provides. Though you might think that the best effort would be good enough, what this actually means is that all packets are treated as equals, whether they are part of a streaming audio feed or a Windows Update download running in the background.

The IP protocol has a Type of Service field in the header that is supposed to describe the urgency of the packet contents – higher values indicate more urgency. In theory, routers could use this field to process higher urgency packets first, buffering the lower priority packets for a few seconds. This kind of system can work on a corporate LAN but out in the lawless internet, the danger is that some script kiddie will discover that his BitTorrent downloads happen much quicker if he sets the TOS byte to 255 for all his packets.

The solution is to add yet another layer of protocols to manage the signalling between the source and all the routers along the way. One such protocol is RSVP, which can request a certain amount of bandwidth and latency from every network hop. Unfortunately, the key word here is 'request'. Not only does every router have to support the RSVP protocol, they all have to agree to meet its demands. If one router ignores this and queues voice packets, the connection will stall just as badly as if they all do.



Picture © Alamy

Imagine this kind of treatment for every little packet of data...

managed to monopolise it yet. When you make a traditional, circuit-switched phone call, you acquire exclusive use of a pair of wires that runs all the way from one end of the conversation to the other, even if they are on the other side of the Atlantic. So long as you are talking, nobody else can use those wires. This guarantees you

the bandwidth you need but it also directly influences the way the phone company charges you for the call. Firstly, and most obviously, you are charged based on the duration of the call because those wires can't be used for anything else until you hang up, even if you have spent the entire call silently sobbing or asking the other

party to speak up a bit. Secondly, you are charged more for longer distance calls because you are monopolising a greater stretch of wire, and there are only limited numbers of connections available between towns and, obviously, even fewer between countries. The higher price of long-distance calls serves to ration their use as well as fund the extra cost of adding more connections.

Enter the internet. It's also a global (largely) wire-based network but it is packet-switched. This means that each chunk of data ('packet', if you want to sound more sawy) is routed

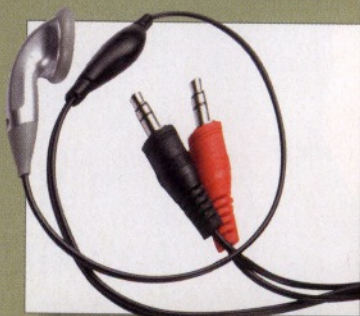
GET VOIP WITH YOUR FREE HEADSET NOW!

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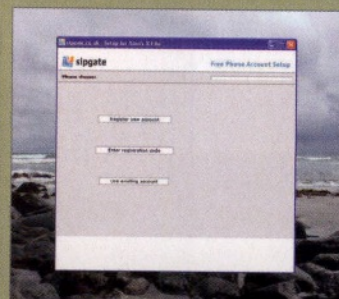
NOTE!
You need to be connected to the internet in order to install the Sipgate software

Plug in this month's fantastic free gift and install the Sipgate software from the Resources section of our coverdisc, and you'll get a brand new dedicated phone number plus a whole hour of free calls to any UK landline today!



Fit the headset

There are two plugs on your headset – plug the red one into the mic in socket on your PC, and the black one in to the headphone socket. Adjust the input volume in Windows' Control Panel.



Install Sipgate from our disc

The first time you click on the Sipgate link, you'll be presented with three options. Click on the **Register New Account** button and in the next screen select your country and area.

"The very nature of the internet means that neither distance nor time effect the cost of a call"

independently from origin to destination and can be interleaved on a given wire, with lots of other packets bound for different destinations. This is a much more efficient use of bandwidth. Couple this with an existing physical wire network that has largely already been paid for by the phone companies and the sheer impracticality of tracking the distance travelled by each individual packet (which has been likened to the phone company attempting to charge more for vowels than for consonants) and you have an internet where neither distance nor time affect the cost of the connection. This is something we take for granted when surfing the web, but the idea of a free, three-hour chat to New Zealand is something else all together.

THE TECHNICAL BIT

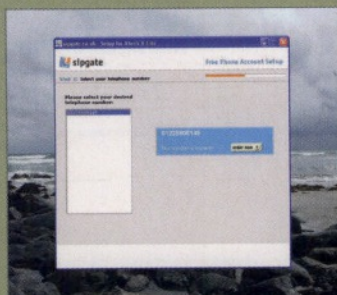
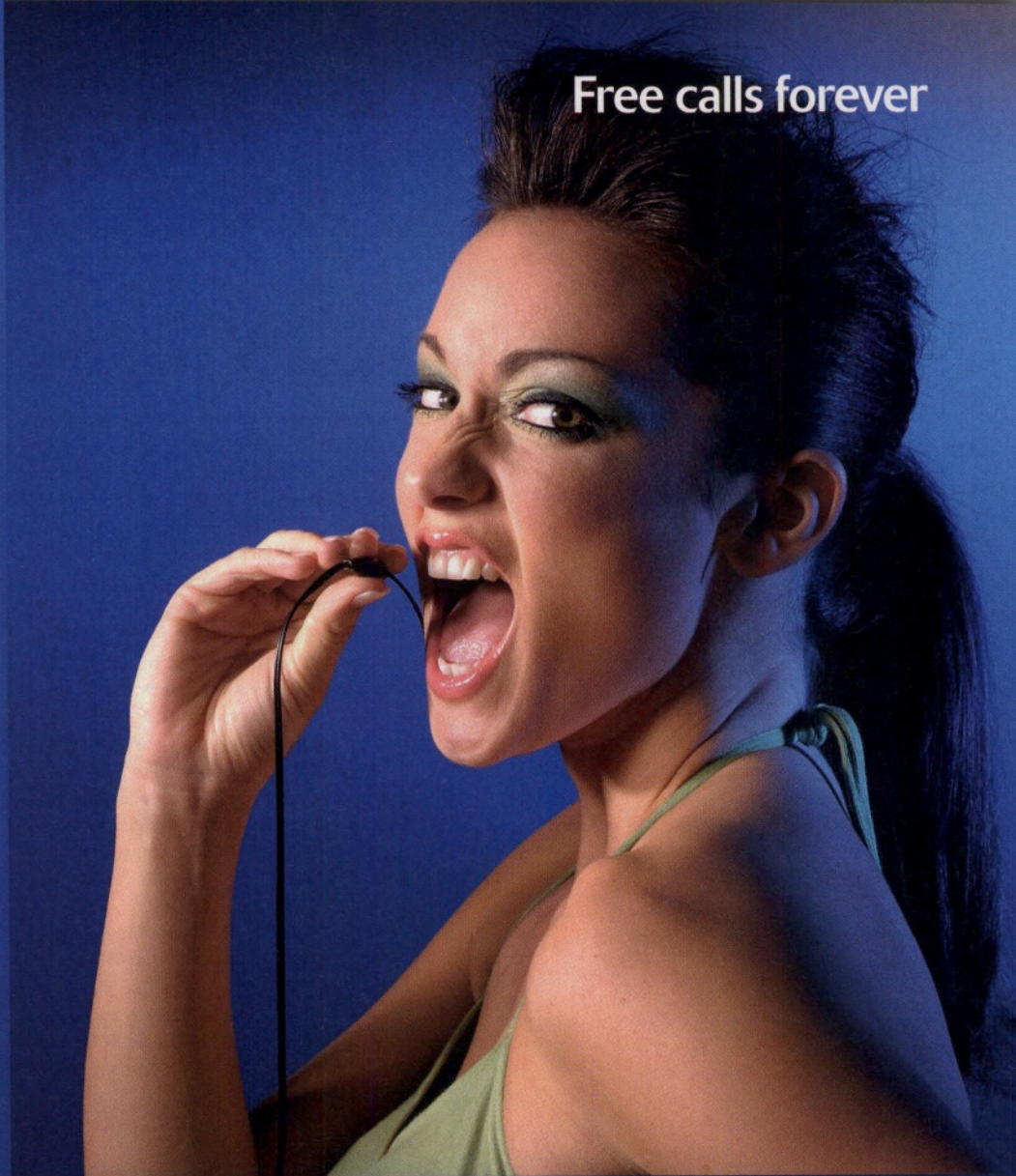
So how does VoIP work? When you speak into the headset mic, the analogue sound waves that comprise your speech are passed to the soundcard. This digitises them using a hardware Analogue to Digital Converter (ADC) on the card. A 16-bit soundcard sampling at 44KHz will generate an audio stream of 1.4Mbit/s, which is way too much, even for most broadband connections. Fortunately, this is also much higher quality than we need for a simple voice connection and audio compresses very well (as the MP3 revolution proved). There are many different algorithms used for this but the most

common is Adaptive Differential Pulse Code Modulation (ADPCM), which samples a much narrower frequency range and transmits only the difference between each packet and the previous. ADPCM reduces the bandwidth down to a mere 32Kbit/s and more advanced algorithms can squeeze speech down to just 2.5Kbit/s.

To send this audio stream over the internet, it must be broken into packets with a header on each one that gives its destination address. VoIP packets don't use TCP/IP because the TCP part of the protocol adds too much bulk to the packet and this reduces the available bandwidth to the

point where streaming real-time data isn't practical. Instead they use the UDP/IP protocol (Universal Datagram Protocol). UDP doesn't have any fields in the header to control the order that packets were sent in, nor how long they have spent in transit. Both of these are crucial if an audio stream is to be reassembled at the other end. The solution is Real-Time Protocol (RTP). The total packet size is still smaller than it would be using TCP/IP but the header now contains a sequence number and a timestamp.

The VoIP packets are then released onto the internet to make their way from router to router.



Choose your number

The next screen will bring up a list of available telephone numbers for you to choose from. Make a note of the one you want to call and then hit the Next button.



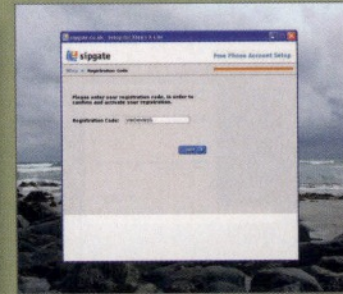
Enter your details

This page is straightforward enough – just enter your address details and your current phone number and Sipgate will email you a registration code for later.



Enter your bonus number

Before you hit the finish button, you must enter the number printed on the back of your CD or DVD label to get your free credit. It will only work once, and you must enter it at this stage.



Enter the registration code

Start the installer again from the same link and choose **Enter Registration Code**. Type in the code that Sipgate just emailed to you to activate your account. The installer will close again.

Free calls forever

"The idea of a free, three hour chat to someone in New Zealand is something else..."

■ This is a bit like writing somebody a letter by putting each word on a separate piece of paper, in its own bottle and throwing them all in the sea. After a while, some of these bottles wash up on the right beach and the recipient begins to piece the message together. The sequence number on each piece tells you – or your PC, anyway – the correct order to assemble the words and the timestamp tells you how long to wait for any lost fragments. This is important because dropping the odd phoneme has much less impact on the perceived quality of the audio stream than stalling the entire conversation until you have every last byte in place.

MAKE THAT CALL

If you use VoIP to call another VoIP user, routing your call is quite straightforward. Ordinary IP addressing is enough to locate the destination PC on the internet and the computer at the other end takes care of reassembling the packets in the right order, stripping the RTP, UDP and IP headers, decompressing the data and converting it back into an analogue audio waveform to play through the headphones. But what if you just want to call an ordinary phone?

For this to work, the VoIP service must operate gateway servers. Your audio is sent to the gateway, with the phone number of the ultimate recipient in the header of a proprietary protocol buried inside the RTP packets. The gateway then dials the number of this phone, decompresses the data and plays it down the phone line as it arrives. This is obviously more expensive for the VoIP Service Provider (VSP) because not only do they have to buy the gateways but they are making actual, chargeable

Do I need a PC?

Free phone calls without paying a grand for a computer

If a PC running VoIP can call an ordinary landline phone number through a gateway, what's to stop you from making a VoIP call from a phone to a PC or from one phone to another? Absolutely nothing.

There are dozens of small, relatively unheard of providers springing up and offering PC-based VoIP using the Microsoft SIP (Session Interface Protocol) technology built into Windows XP. But most of them also offer a box with a handset that plugs straight into a router or ADSL connection and bypasses the need for a PC altogether. In short, these boxes look like a phone, act like a phone and – hell – they are phones. Even BT is in on the act, with its Broadband Voice service (www.btbroadbandvoice.com) – although this is by no means the cheapest deal around.

There's plenty of options incoming, though, as this is the year that will see VoIP usage rise dramatically. Belkin, for example, offers a callEverywhere service in the US using a piece of hardware called Message Manager plugged into a broadband connection. It's just one of the many that'll arrive here over the next 12 months.

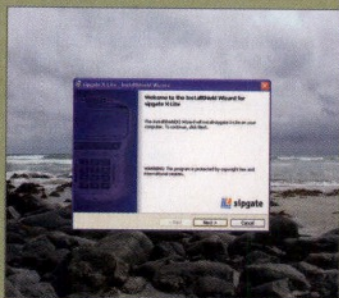
With an adaptor, even this can make VoIP calls.



phone calls. In fact, unless the VSP has gateways in every major city, they will end up making the long-distance call that you tried to avoid in the first place. The good news is that a whole bunch of newcomers to the telecommunications market are banding together to take advantage of each others' resources. Sipgate – sponsors of our reader offer this month – for example, offers free calls to users of several other VoIP networks, and absolutely thrashes BT pricing to pretty much every international destination we could find comparisons for. Though free or cheap long-

distance phone calls are still the main attraction of VoIP now, this may not last forever, as it's an artefact of the transition from one pricing model.

In the not too distant future, VoIP will account for a greater and greater slice of the voice market and the telcos will simply offer subscription services very similar to mobile phone contracts. For a while, the incentive to switch to VoIP will be supplied through odd mixtures of data and voice services. In the long term, we will use VoIP every day simply because it's going to become the online voice communication standard. **PCF**



Finish the installation

Restart the installer application one last time and click **Use Existing Account**. Enter your username and password and Sipgate will install to your PC.



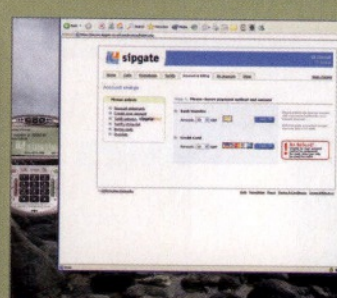
Start making calls

With this basic installation you can receive calls on your Sipgate number, and dial into other Sipgate accounts for free. It's not total connectivity, but it's a start.



Log into the website

Your account details are stored on the Sipgate website, www.sipgate.co.uk. Log in with your username and password using the fields at the top right of the screen.



Enjoy your phone

Click the **Accounts and Billing** tab on the site, here you can add credit to your account. Check out the Sipgate website for information on configuring the software with firewalls.



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HANDHELD



Blockbuster in the pocket or a bad case of shaky cam on the train? Jeremy Laird hands out the handheld oscars...

PMC

FOR

Microsoft's Portable Media Centre concept is a no-brainer, in theory. It's a streamlined device built from the ground up for one purpose – movies on the move. The interface is slick, logical and easy to use. Storage capacity varies, but you're talking at least 20GB, enough for 40 two-hour movies or 80 hours of recorded TV. Transferring all your recorded TV shows from a PC running Windows MCE is as simple as connecting via USB – synching can be configured to take place automatically. Even better, boxed copies of Windows MCE are now available for £80. With a typical battery life of five hours, train journeys will never be the same again.

AGAINST

The Portable Media Centre is all about video playback, right? Then why the hell

do all PMCs to date feature screens with a seriously ordinary 320x240 pixel count? That's less than a quarter of the number of pixels of common-or-garden DVD. And it shows. Compared with a PDA stacking a full 640x480 screen, PMC's look grainy, blurry and pixellated. Stick to watching episodes of *The Simpsons*, though, and you'll probably never notice the difference.

Price From £350

Screen Typically 320x240 resolution, 3 – 5-inch or larger, 4:3 aspect ratio

Video formats supported WMV @800kbps

Storage options Hard disk + MMC, SD, CF

* Specifications vary



BLURRY

PDA

FOR

Either you get PDAs or you don't. We suspect those who don't simply haven't tried one because, true to its desktop PC roots, the PDA is so damn flexible and powerful, it's scary. It supports every video file format you can think of. Storage is provided by SD and CF memory cards, both of which keep getting cheaper. Dell's Axim X50v (see page 76), is the only pocket-sized device here capable of playing full DVD-quality video. Until you've seen the stunning clarity, you haven't seen the best portable media has to offer. It even offers VGA-out, allowing you to play movies on a projector.

AGAINST

The whole PDA is never quite the sum of its parts. Getting things working is often fiddly and time-consuming. Making matters worse, specs vary wildly, so there are no guarantees regarding what your PDA can handle. Only the latest and most powerful are capable of decoding high bit-rate video. And battery life is usually poor for CPU-intensive video decode work: typically two hours at best.

Price From £125, but budget for over £250 for a decent unit plus memory card

Screen Up to 640x480 resolution, 4-inch, 4:3 aspect ratio

Video formats supported DivX, MPEG2, MPEG4, WMV9 and more @ 4Mbps

Storage options MMC, SD, CF

* Specifications vary

THE ENTHUSIAST'S CHOICE

NINTENDO DS

FOR

With a wacky form factor boasting two screens (one of them touch-sensitive) and Nintendo's quirky, yet compelling gaming content, the DS is unique. The main unit is cheap at around £100, and the Play-Yan add-on adaptor required for video playback will only add another £30–£40 when it arrives in the UK. Codec support takes in the familiar MPEG4 and ASF suspects and there's decent decode poke: up to 1Mbps bit-rate.



Storage takes the form of SD memory cards, a 1GB example of which will set you back £60 or so. Battery life is claimed to be a solid five hours.

AGAINST

Although the total display acreage on offer might give Sony's PSP a run for its money, it's split over two screens. So, you'll be watching videos on a single, rather puny and low resolution 256x192 resolution LCD. And it's not even a particularly bright screen. The bulky, pocket-challenging casing is also a put-off. Most inconvenient of all, the Play-Yan has yet to make an appearance in the UK.

Price £99 (estimated)

Screen 256x192 resolution, 3-inch, 4:3 aspect, 4:3 aspect ratio

Video formats supported MPEG4, ASF @ 1Mbps

Storage SD card

INCONVENIENT, WITH LOW-RES SCREEN

VIDEO

Handheld video

SONY PSP

FOR

At last, we've sampled a PSP at close quarters. And make no mistake, it's an impressive beast, and a whisker slimmer than we'd been led to expect. The movie-friendly 16:9 aspect-ratio widescreen display fills out the chassis very nicely indeed, rendering the Nintendo DS's all-bezel-and-no-screen look instantly old-hat. And with a native resolution of 480x272 and a massive 4.5-inch screen diagonal, it's certainly a cut above the console competition. Plans to flog pre-recorded movies on the PSP's UMD disc should also make it the most straightforward device for movie watching.

AGAINST

That widescreen display isn't quite as stunning as the fans would have you believe. A 480x272 resolution sounds impressive, but it's well below full-VGA PDAs. Video playback, while good, doesn't leave you drooling insanely – a feat the Dell Axim X50v manages. File format support is limited to a certain flavour of MPEG4 (H.264 layer) and, those UMD discs apart, you're forced to fork out for costly Sony Memory sticks for storage.

Price £175 approx

Screen 480x272 resolution, 4.5-inch, 16:9 aspect ratio

Video formats supported MPEG4 (H.264 layer) @768Kbps

Storage UMD (pre-recorded), Sony memory stick

LIMITED FILE SUPPORT

LAPTOP

FOR

Notebooks? In a pocket video player round-up? They're surely too expensive and smack of overkill for watching video on the move? Well, you can now pick up a 12-inch ultra-portable such as the MV Mobeus (www.go-mv.com) for little more than £600. Think about it: that's a 12-inch widescreen display packing 1,280x800 pixels. So forget weighing up the pros and cons of QVGA and VGA on a pokey PDA or console. Instead, enjoy 720p HD TV content on a device small enough to slip into most bags. Of course, it's a PC too, so it's useful for much more than video-watching antics.

AGAINST

£600 might be cheap for a laptop, but it's still way more than you'll have to part with for any of the other devices here.

And if you don't need any functionality except for video playback, you're probably better off with one of those cheapo portable DVD players that support DivX playback and kick off at about £150. The other major drawback to going with a laptop is battery life. Two hours is the most you can expect from a budget ultra-portable.

Price £600

Screen 1,280 x 800, 12-inch, 16:10 aspect ratio (12-inch ultraportable)

Video formats supported All

Storage Hard disk, optical disk, SD, CF and more

* Specifications vary

FLEXIBLE, BUT PRICEY

HD DREAMING

The desktop future is high-definition video

If that's the low-down on portable video, what's on the desktop? The full-size console industry is currently obsessed by high-definition (HD) gaming and video. Both the Xbox 2 and PlayStation 3 will be capable of HD goodness when they arrive, and many an IT sage predicts they will drive HD into the mainstream.

Of course, PC enthusiasts with powerful systems have had HD gaming for yonks. Arguably, your average PC with a dedicated video card is capable of something approaching HD gaming, depending on the title played.

As for HD video, it all comes down to availability of content. In Japan and the US, HD broadcasting is well-established. Back in Europe, we have to make do with a single HD Satellite channel, the unheralded Euro1080. Still, that doesn't prevent you from using your PC to playback HD video files. In fact, a PC is probably the only affordable consumer-level device capable of rendering HD video.

A handful of movies have been released on conventional DVDs in full 1080p HD, using Microsoft's WMV9 codec. There's also a library of WMV9-encoded movies available in 720p. Check out www.high-def.de to see what's on offer, but don't expect to find all your old favourites.

It won't be until those two arch enemies, Blu-ray and HD-DVD, begin to battle it out in earnest at the end of 2005 that you can expect the big movie studios to begin leveraging their back catalogues in glorious HD. We can't wait. **PCF**

GIZMONDO

FOR

The almost mythical Gizmondo is tough to beat on paper. Built on Microsoft's Windows CE platform, it packs everything from a tri-band GSM phone and (optional) GPS tracker to NVIDIA's flagship 3D chip for handhelds into its diminutive dimensions. Video playback comes courtesy of Windows Media Player 9, delivering support for MPEG4, while storage is in the form of SD cards. It has the potential to replace a gaggle of devices, from phone to console, with its full-on feature list.

AGAINST

A "huge, high-resolution TFT screen," says the Gizmondo's upbeat PR material. In our somewhat more realistic book its



2.8-inch, 320x240 native resolution puts it in joint last place with the Nintendo DS as a video-watching device. Of course, the Gizmondo has yet to appear in the wild, and its spec has been tweaked before, so salvation, in the form of a larger screen with a higher-resolution screen, could yet arrive. When, that is, the Gizmondo itself appears...

Price £229

Screen 320x240 resolution, 2.8-inch, 4:3 aspect ratio

Video formats supported MPEG4

Storage SD card

VERSATILE, BUT LOW-RES





San Francisco - 09:45
enemy engaged



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of
WAR
DIRECT ACTION

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London - 15:40
target acquired



Mission briefing_

If war was to break out tomorrow, it threatens to be the most deadly. Cities worldwide, landmarks and even our very own backyards could become the battle grounds. In Act of War: Direct Action this is our reality and your mission is to fight back and reclaim the world. With the ultimate in authentic weaponry and vehicles and real-world intelligence from the CIA to News reports at your disposal, no other RTS puts you in control of tomorrow's war.

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16+

DVD
ROM



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MARCH 18th 2005



Below: A genuine, in-game multiplayer flying kick. Brilliant!

Below: Even at hell's door, Hal wouldn't stop talking about the size of that fish.

The office fountain was the height of designer chic.

AIR

Run all you like,
horror always
catches up.
It caught
up with
Dan Gril
in a
dank basement,
somewhere in Paris...

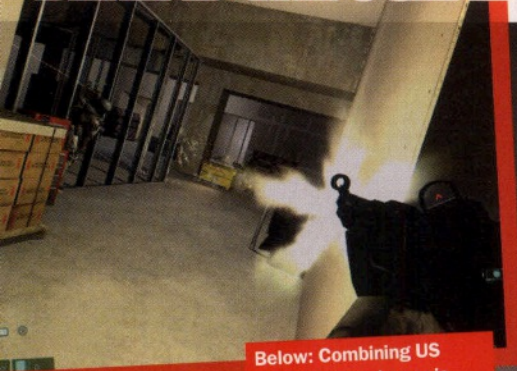
The scene is an office block, late at night. A solitary figure is creeping through the foyer when a crackle comes over his radio, telling him to freeze. Above a lift door, the numbers are counting down... in a heart-stopping moment, the doors 'ping' open, to reveal an eviscerated Delta Force trooper slumped inside. And no-one else. Our loner steps inside the lift gingerly and hits a button. The doors close, the lift judders upward, and then the lights start flashing on, off, on, off. The screen goes grainy, like security camera footage. If you could feel his fingers through the cold Kevlar gloves, you'd bet they were greasy. Between the subliminal flickers of the bulb, a filthy, dark-haired girl appears in the corner of the lift and vanishes again in the blink of an eye, just as the screaming starts, the doors open and gunfire pours into the lift, which creaks threateningly, about to plummet... "Last time I do overtime," thinks our hero.

When we first saw *F.E.A.R.* footage at the last E3, we were sceptical that the movie we saw was actually in-game; it seemed crazy that anyone could make a horror movie that was also an action-FPS. Now, having actually got our hands on the title, we're convinced, terrified and excited. The game is the babe of FPS giant Monolith, and we met with their Director of Technology, Kevin Stephens, in Paris.

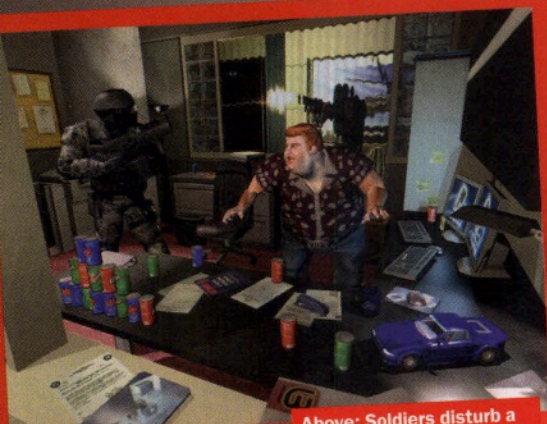
FIRST ENCOUNTER ASSAULT RECON

The whole game is set in a 12-hour period, a day where you start in the evening, fight through the night and, maybe, greet the dawn. We played through the beginning, from storming the building to exploring the first office floor and encountering the first truly weird enemies. Kevin says "We really wanted the player to feel immersed, that you're in this action movie and it's you. If you pass by a mirror, you'll see a mask because we want the player never to doubt that they're in the game."

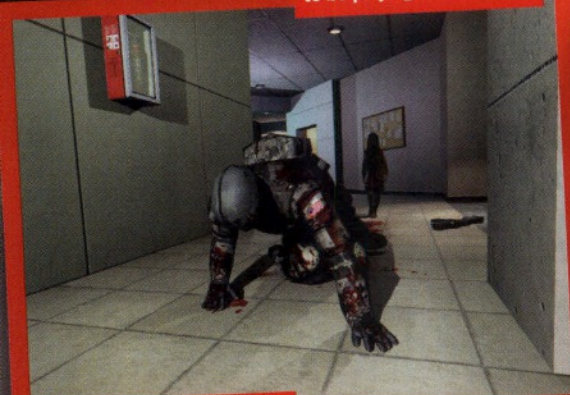
The first thing we noticed was the slow-mo capability; real-time play garners you the ability to trigger a *Max Payne*-style slow-mo, where bullets leave ripples and grenades send out bubbling shockwaves, shattering glass and smashing plaster off the walls. The effect is created using DirectX 9 volumetric lighting.



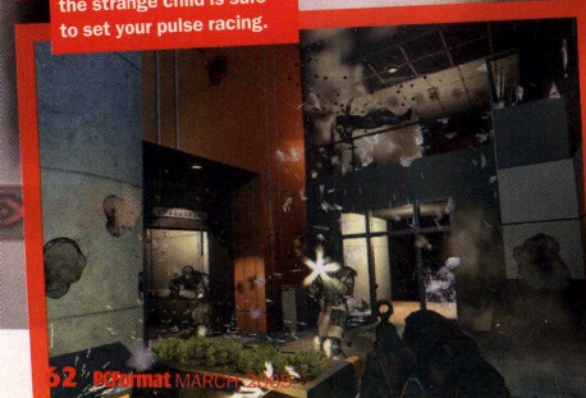
Below: Combining US and Japanese horror is a bloody undertaking.



Above: Soldiers disturb a programmer who appears to be playing *Deus Ex*...



Above: Starters orders... the strange child is sure to set your pulse racing.



effects, intended for use in watery scenes, to give the environment a viscous, fluid feel. "We wanted to capture an action movie," says Kevin, "the concept of slowing down time is in virtually every action movie, way before the *Matrix*. No-one's really done it in an FPS." Is it just a gameplay device or is it justified in the story? "Both. It started as a mechanic – definitely. There was always that internal debate though – does it need to make sense or is it enough that it's cool. The player can decide on their own whether it fits or not; the core was for gameplay."

THE SLOW DANCE

Notably, during these moments of slowdown, *mêlée* combat really comes into its own. Players can hit, perform flying kicks (where your legs flail through the air in front of you), or slide into enemies to disorientate them before the inevitable take-down. It, and the bone-chilling horror, land the game halfway between a Hong Kong action movie and a Korean or Japanese horror flick, as opposed to the traditional steroid-driven Hollywood-inspired FPS. "The lead designer believes that [Japanese horror] is scarier. Ghost stories have been around forever and I think Hollywood hasn't focussed on them; they want monsters. It's pretty easy to see the strings on monsters, but something that's basically human, or was, is scarier, more believable... 95 percent of being afraid is your imagination. Japanese horror does a great job of that. You see things and it's kinda blurry and you're asking yourself, 'What is that? Is that a girl? Is that... hair?' Any films of particular influence? "The *Ring* series, *The Eye*, *The Grudge*, *Dark Water* – the lead designer's a huge movie buff."

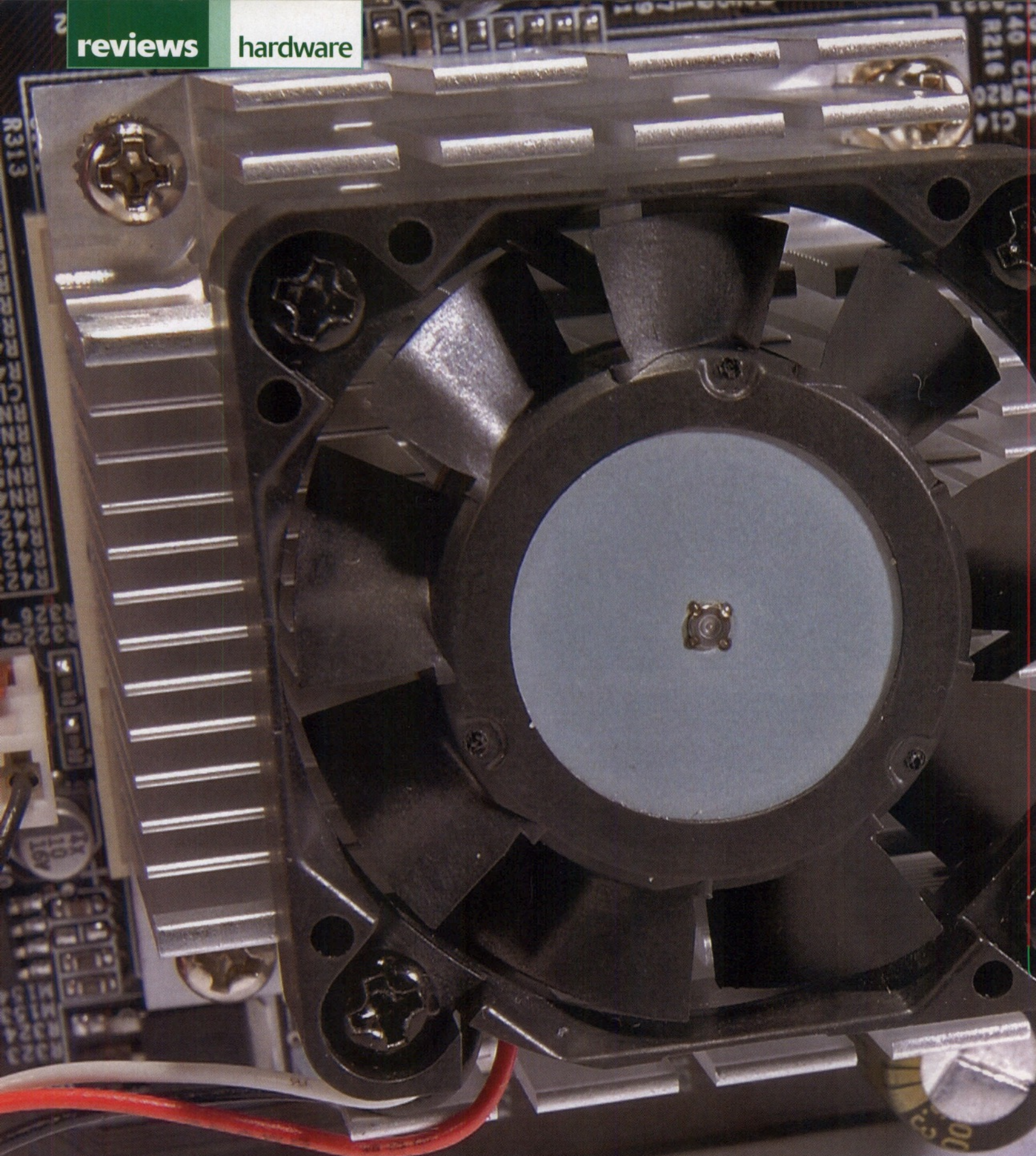
Concurrent with the horror theme, you're all alone: you never fight alongside AI teammates because "they get stuck behind you in hallways. There are places where you have teammates, but they tend to be scripted scenarios." However, the enemy AI is fantastically clever. "We've been iterating this AI since *NOLF* in 2000; we moved away from the primitive node or pathbased system to *NOLF* 2's volume based system, giving the programmers way more freedom. Now *F.E.A.R.*

uses a navigation mesh system, where the programmers lay down polygons that say "the AI combatants can go anywhere in these areas." You still have

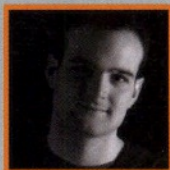
to give them hints, like where cover is, but they can handle most of it themselves." The teamwork is also sharp and clever. "Depending on the number of AI combatants, a hurt enemy's going to look for cover. And there's definitely flanking, though it's easy to make AI that's really hard; the key is to make the AI fun but intelligent, and that's tricky."

Kevin also led us through a hands-on test of the team multiplayer. Set over tightly-planned environments, it has a feeling halfway between *Half-Life 2 Team Deathmatch* and *Rainbow Six*. Intriguingly, the *mêlée* and slow-mo effects from single-player are also present. A single person picks up the slo-mo power-up, which charges up; it affects everyone on the map when triggered, but players on the activating team seem to move and shoot slightly faster giving them an advantage. Apart from that addition, multiplayer feels a light but worthy addition to the single-player.

Finally, we asked why Monolith focuses exclusively on first-person shooters, from *Claw* to *F.E.A.R.* Partially, this is caused by the constrictions of the LithTech engine; even when you're playing as a thousand-foot tall robot, it still all looks very similar; but it's entirely possible to make other games using that engine. "I personally feel that whatever you work on, you ruin for yourself," says Kevin, "*Half-Life* was one of my favourite games, but I play *Half-Life 2* and I'm just analysing it the whole time. I just can't play it, and that sucks, I hate that! I still like shooters, but I'm always wondering how things work. But if I play something like *Diablo II*, which is my all-time favourite game, I don't think that way; I'm just a gamer hacking away and clicking." **PCF**



PCFormat Experts



RUSSELL JAMES
His neural interface complete, Russell's reaction times are now measured in picoseconds. Weirdly, his work is still late.
MOST WANTED
GTR



JEREMY LAIRD
Peripheral junkie Laird has decided PCs are old-hat. Looks forward to the day when everyone works off PDAs.
MOST WANTED
A chauffeur



DAN GRABHAM
Technology scribe Dan has so many wireless devices in his flat he can pick up long wave radio from his glasses.
MOST WANTED
More wireless kit



DAN GRILIOPOLOUS
Gril played *Children Of The Nile* so much he now insists on being called 'PCFormat's Games Pharaoh'. Silly boy.
MOST WANTED
His own pyramid



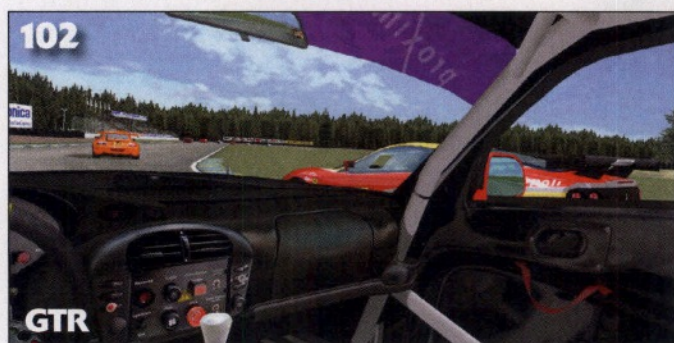
ALEC MEER
Used to whinge endlessly about living too close to the office, so we had him dropped on the Isle of Arran.
MOST WANTED
A new woolly hat



KIERON GILLEN
Uploaded himself into his PC to fight off hackers, but agreed with their anarchist views and let them carry on...
MOST WANTED
A working PC



THIS MONTH



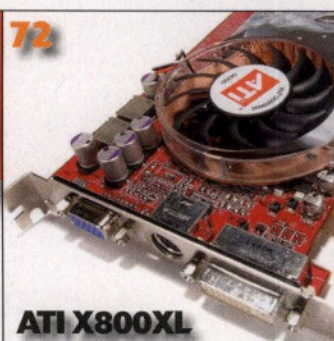
GTR



Flash drive mini test



Olympus M-mini



ATI X800XL



Logitech DiNovo 2

It might not look like a new product, but Logitech has revamped its top deskset. But it's got the same MX900 mouse, the same keyboard and is, broadly speaking, the same. Mind you, the changes are under the bonnet, where there's better media support for extra apps like iTunes. Is it enough to make it worth your while? Find out on page 78.



Toshiba TDP TW90

Happiness is 2,200 lumens, reckons Jeremy. But then, he's a geek. Mind you, Toshiba has produced a stunner here – all the benefit of a top notch DLP projector without the price tag – one and a half grand isn't bad y'know. However, we had our reservations, even though watching *Lord of the Rings* through its lens was somewhat of a religious experience.



Immortal Cities: Children of the Nile

The Egyptians ruled a vast swathe of the African continent for centuries, and built some pretty impressive buildings while they were at it. Thanks to Tilted Mill, you can now recreate it in minute detail. But do you want to? Find out here.



Darwinia

When this arrived in the offices, passers-by became oddly transfixed by its leftfield graphics and beautiful colour schemes. Then we informed them that it was coded by an amateur programmer in his spare time, and were similarly entranced. Other than distinctive graphics though, what does it have to offer?

PLUS

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MEDIA CENTRE

NOTEBOOK

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POWER PCs

HOME LAPTOPS

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POWER LAPTOPS

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TM067PCFO/03/2

reviews

All the latest games, gear and apps

92



Star Wars: Republic Commando

Our scoring system

0-19% Unusable or astoundingly rubbish
20-49% Largely not worth spending money on
50-69% Some decent features but uninspiring
70-79% Accomplished without the must-have factor
80-89% Outstanding. Awarded Top Gear or High Score
90+ Exceptional. A PCFormat Gold Award winner

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We've been reviewing kit and games for 13 years. With over 8,500 reviews written, we have the most talented, dedicated and authoritative teams in the business.

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4. High Score/Top Gear

It's a misconception that only 90%+ is essential purchases. Anything scoring 80% or higher is festooned with one of these, making it one of the month's most highly-recommended.

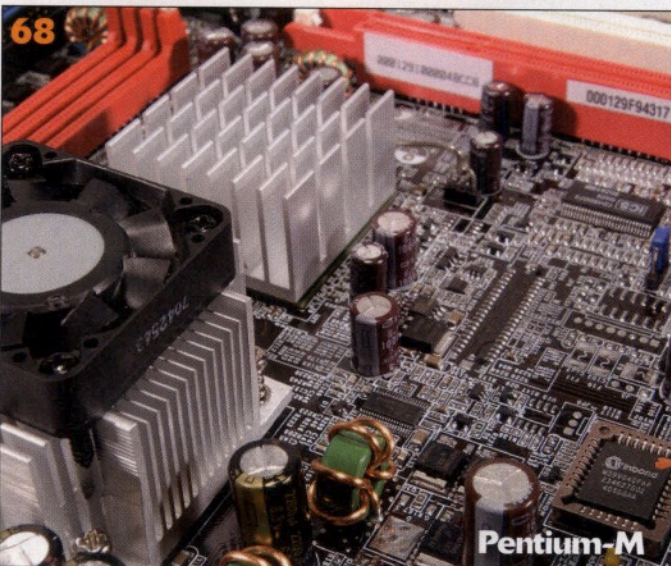
5. We want to know what you think

We are PC fans writing for PC fans, so please share your thoughts on new stuff in our forum: <http://forum.pcformat.co.uk>

gold
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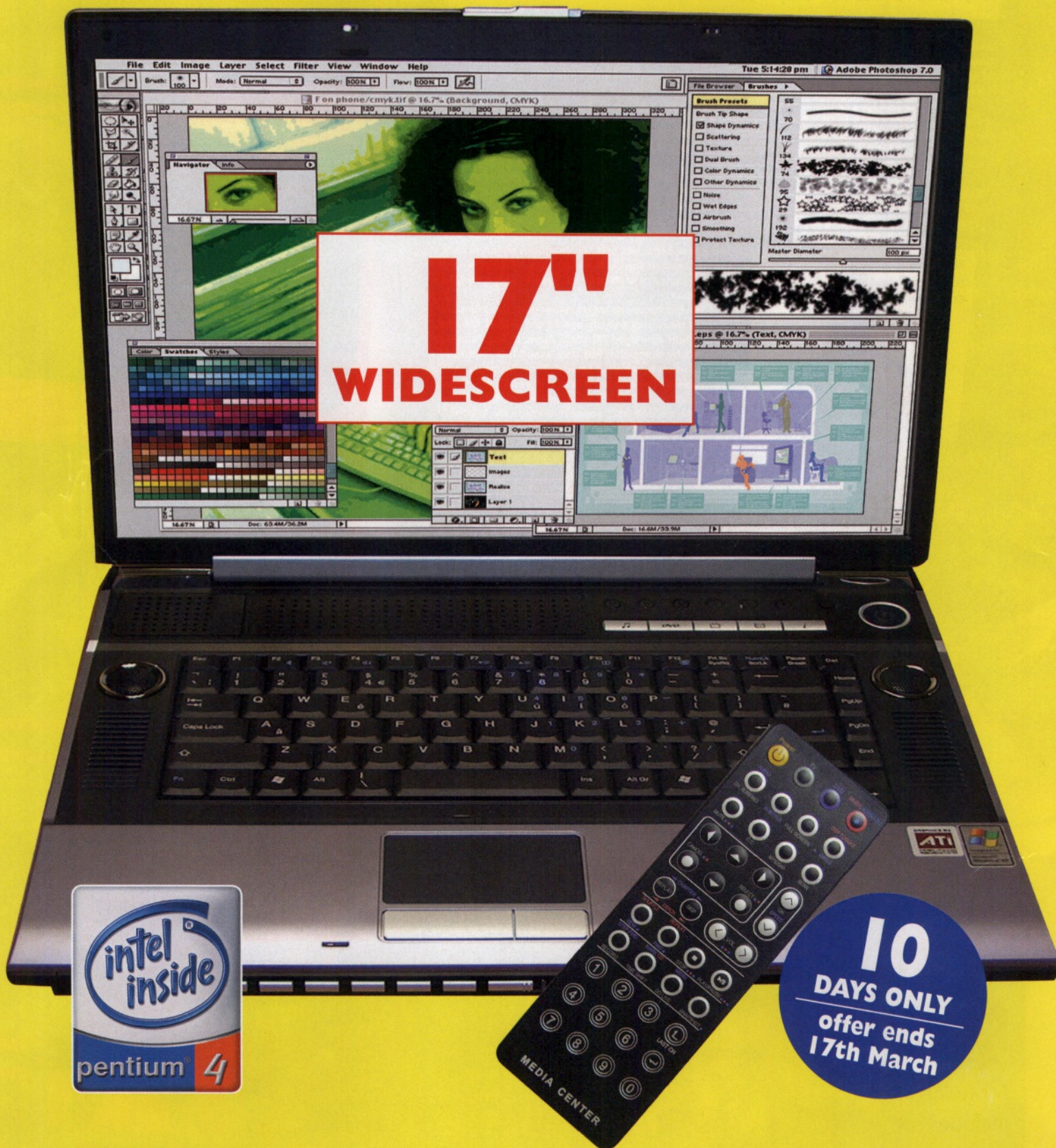
high
score
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Pentium-M

ULTIMATE 17"



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THE LOW COST
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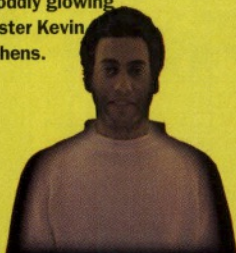
29.8%
APR

Monolith's Trekkie-inspired hometown

It was founded by a group of educational programmers with a history in computer and educational games back in October 1994. While still at Edmark, they produced a technical demo to demonstrate that games could run in Windows rather than DOS; this was sufficiently impressive to catch Microsoft's eye, who worked with Monolith on the early versions of what was to become the LithTech engine.

F.E.A.R. technology because it includes all the tools and game code, not just the renderer, which is only ten per cent of the code base," says Stephens - out to such industry stalwarts as Square, Activision, Enix and Climax.

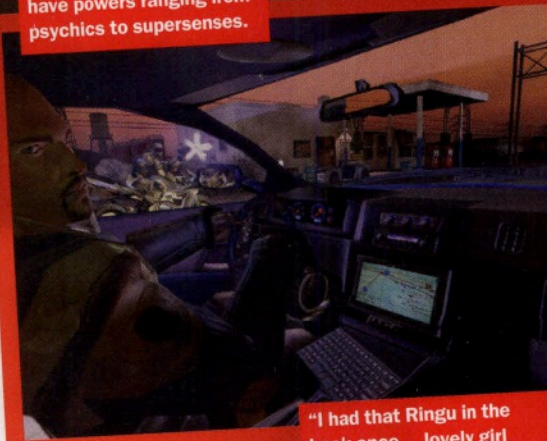
The oddly glowing techster Kevin Stephens.



"It's easy to make AI that's really hard; the key is to make the AI fun but intelligent, and that's tricky"



Above: The F.E.A.R. team have powers ranging from psychics to supersenses.



"I had that Ringu in the back once... lovely girl but a terrible tipper."



Below: Dancing like Zorba fails to stop lead bullets, unsurprisingly.



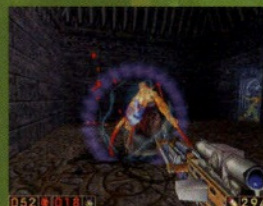
Monolith's CV includes some works of genius and some true stinkers. Here's the best of the lot



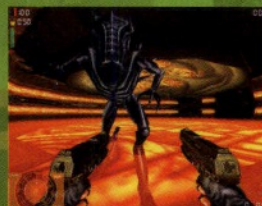
With its poison-shooting tongue lodged firmly in its galvanised cheek, *NOLF* introduced a cartoony Austin Powers-style, which its sequel refined.



Shogo **PCF92 - 85%**
This anime-inspired FPS had you switching between a human and a mammoth, towering robot-suit, involving some inspired stomp-the-humies/smash-the-bots action.



Blood 2 PG-13 - 78%
By name, by nature; *Blood* was gory, twisted and dark, set in a near-future dystopia reminiscent of *The Crow* and *Blade Runner*, though with more clowns. *Blood 2* was just as scary.



The sequel to Rebellion's perfect AvP kept all the cool bits (like playing as human, alien or predator) and rebuilt it all in the Littech engine.

PORTABLE PROCESSORS DESKTOP MACHINE

Pentium-M 755 2.0GHz

DFI 855GME MGF motherboard

The King is dead. Long live the King. Can Intel's Pentium-M processor kill the Pentium 4? Does it ring a death knell for the desktop as we know it?

Price £294 Manufacturer Intel Web www.overclockers.co.uk

The fastest gaming CPU ever is the Pentium-M. There, we've said it. Normally, hardware reviews, PCF-style, are slow burners. A chance for both reader and writer

to indulge themselves a little before working their way to an elegantly argued conclusion. But not this month, folks. This month is different.

However you slice it, with the arrival of the first supporting desktop motherboards, the Pentium-M processor has made a mockery of almost every assumption we've harboured and every nugget of wisdom we've received about the technology that drives PC performance forward. So grab a seat and prepare to be stunned.

You can't have towering processing poke without equally stratospheric power

consumption. Wrong. CPUs will only get hotter as computing clout increases. Think again. Batshit fast bus speeds and memory sticks clocked high enough to give you a nosebleed are essential accoutrements for the modern PC. Er, apparently not. The list just goes on.

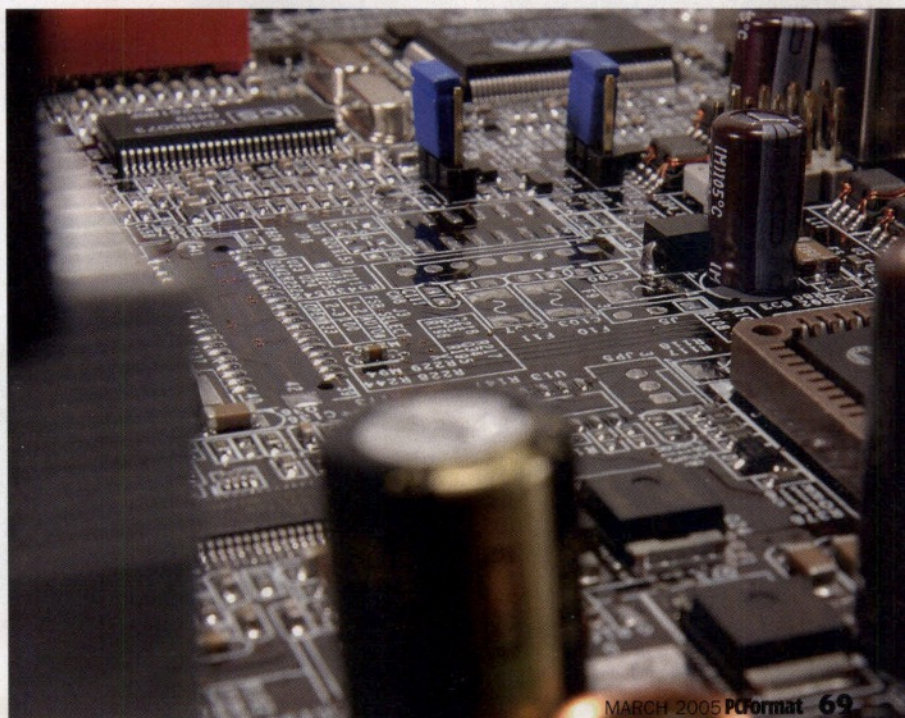
Ultimately, the Pentium-M throws doubt on the notion that the PC industry is fast approaching a technological wall. Until we saw what the Pentium-M was capable of, freed from its notebook shackles, we were convinced the chip-

making industry was suffering from diminishing returns in its attempts to compress its products into ever more

"The fastest gaming CPU ever is the Pentium-M"

Lilliputian dimensions. Think roasting-hot Prescott Pentium 4 and the failure of Apple's G5 processor to hit 3GHz as promised – both 90nm CPUs built using

Ultra-cool:
The Pentium-M
delivers a big hit
to the Athlon 64.



The AOpen alternative

Breadbox PCs used to be noisy. Not anymore.

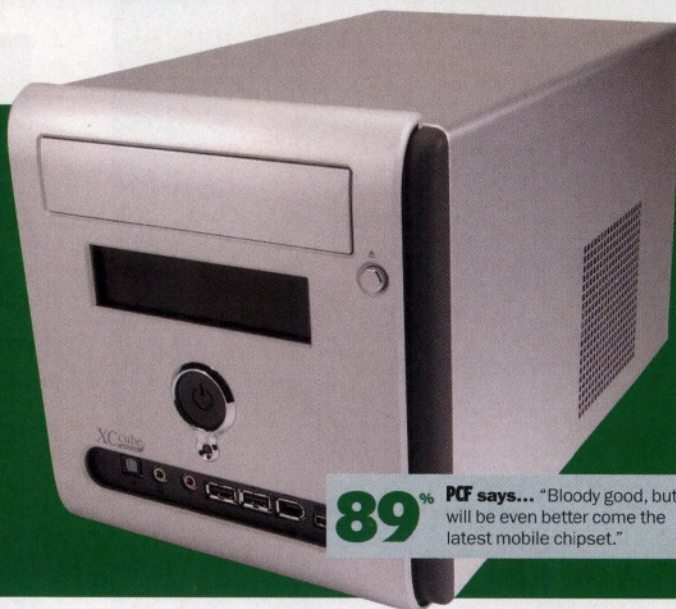
Price £252 Manufacturer AOpen Web www.aopen.nl

When we reviewed Shuttle's new BTX-based barebones system an issue or two back, we were convinced the perfect small PC had arrived.

However, after the staggering showing the Pentium-M has just put in, we're not so sure. Thanks to the incredible, common sense-defying properties of Pentium-M this new AOpen barebones system takes over as the breadbox king. We certainly can't complain about the noise it puts out. It's the quietest Shuttle-sized system ever. Even better is the build quality. It's nothing less than exceptional. AOpen's standards have been creeping up, month after month, year after year and this unit is the culmination of all that effort.

Attention to detail abounds, from the tactile rubberised power button to the extraordinarily high quality (think Audi car dashboard) of the plastic flanking the front bezel. But it's that beautiful anodised alloy bezel itself that most impresses. It's a lovely slab of metal that even extends to the optical drive door. Yup, this system even pips Shuttle for pure lushness of build.

As for the tech specs, well, it's pure first-gen Pentium-M. So that's Intel's 855G chipset complete with lowly 400MHz system bus, single channel memory support topping out at 333MHz and Intel's laughably-monikered Extreme Graphics chip. There's an AGP slot which would happily accept, say, an X800 XL.



89% PCF says... "Bloody good, but will be even better come the latest mobile chipset."

the latest technology. Most agreed that Moore's (routinely misrepresented) Law was finally coming to an end.

The Pentium-M fits neatly into the clutter-free motherboard.

GET WITH THE PROGRAM

Well, as of now all that's bunkum. The merest glance at our benchmark figures

is enough to prove that Intel's clockspeed-is-king approach to making CPUs isn't just dead, it's positively fossilised. But before we get into the nitty gritty of the numbers, let's take a peek at the technology behind the glorious Pentium-M.

As every good PC enthusiast knows, the Pentium-M was designed by Intel's Israeli engineering unit. Although some parts of the original Pentium-M (aka Banias) were carried over from the good old Pentium III, it was the first CPU

from either of the two heavyweights of PC chip making specifically conceived for the demands of mobile form factors. The latest version of the Pentium-M, known internally at Intel as Dothan, may only be a refinement of Banias, but that doesn't

stop it from being a mightily impressive slice of silicon. Impressive enough, rumour has it, that the Israeli design team might just come out on top in the internal battle to mastermind the replacement for Intel's tiring Pentium 4 Netburst desktop architecture. Whether

that's true, there's no doubting Dothan's a tough little cookie capable of an awful lot of work in each clock cycle.

On-paper, Dothan is an interesting mix of cutting edge and old school. Thanks to Intel's latest 90nm manufacturing technology, it's only

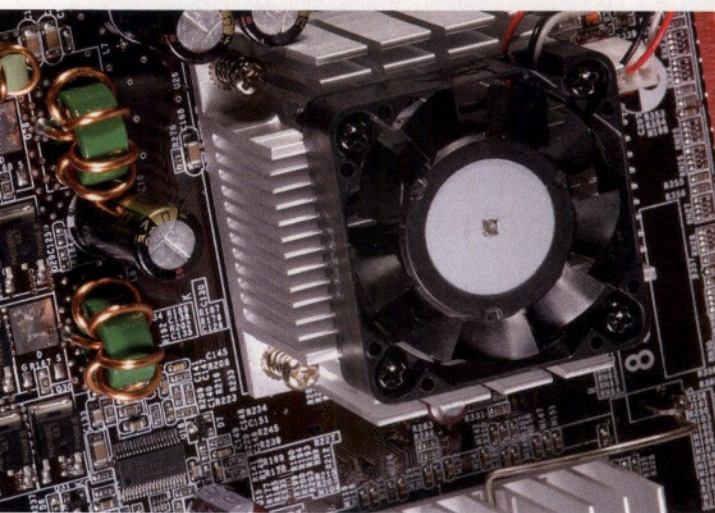
slightly larger than Banias despite boasting twice the number of transistors – around 140 million. Much of that increase is down to a beefy 2MB of L2 cache, 1MB up on Banias and more than any other current CPU designed for the consumer market (Intel's 2MB Pentium 4 Extreme Edition processors are essentially rebadged server chips). And in contrast to the well-documented heat dissipation problems suffered by the 90nm Pentium 4, Intel claims that Dothan actually runs cooler and uses less power, clock for clock, than Banias.

PIPE DOWN

Less cutting edge, but not necessarily less effective, is Dothan's pipeline architecture. Intel hasn't come clean about the exact number of stages in the Pentium-M's pipeline, but it's very likely 12 or 13. That compares with 30 for the current Pentium 4.

Although a longer pipeline allows chips to be clocked higher, it also

"Intel's clockspeed-is-king approach to making CPUs isn't just dead, it's positively fossilised"



BENCH MARKS	INTEL PENTIUM 4 EE 3.46GHz	AMD ATHLON 64 4000+	INTEL PENTIUM-M 2.0GHz	INTEL PENTIUM-M 2.3GHz	INTEL PENTIUM 4 3.8GHz
CS: Source. 1024x768 (FPS)	118	126	105	122	107
Doom 3 800x600, high quality (FPS)	92	95	80	95	90
Far Cry. 800x600, high quality (FPS)	72	71	60	68	68
WMV9 HD to DVD encode (min:sec)	4:13	4:40	5:33	4:50	3:37
iTunes WAV to MP3 encode (min:sec)	2:19	3:02	3:20	2:53	2:25
WMV9 HD decode (average CPU utilisation)	28%	53%	65%	55%	25%

The future is Pentium-M

Will Intel take a leap of faith and offer mobile desktops?

There's no doubt it's rather embarrassing the Pentium-M hands a rather large beating to Intel's fastest clocking desktop CPU, the 3.8GHz iteration of the P4. Ironically, however, Pentium-M's emergence as a capable desktop chip just about allows Intel to claim across-the-board performance domination. If it's dizzying clock speeds and scorching SSE-dependent multimedia performance, Pentium 4 is your man. For everything else, it's very likely that Pentium-M will make the Athlon 64 look pretty silly. After all, it delivers similar performance on a much lower-specced platform and for much less power consumption and heat dissipation. Indeed, there are many who suspect that Pentium-M's real niche could be in business applications and servers. Precisely the sort of work where its low heat and power properties give it an advantage over AMD's Opteron and where the mediocre SSE performance matters little.

Thus far, the emergence of the first Pentium-M supporting motherboards and bare bones systems from AOpen and DFI says nothing about Intel's intentions – any motherboard manufacturer is free to buy 855G chipsets from Intel and make desktop boards.

So what does this mean for the future? Well, Intel has already committed to producing a dual core Pentium 4 solution (rumours abound that this chip will actually be two separate cores lashed together on a single package). But will it be brave enough (and sane enough) to officially back the technology the Pentium-M is based on as a desktop platform? In the end, we think it's the only strategy that makes sense.

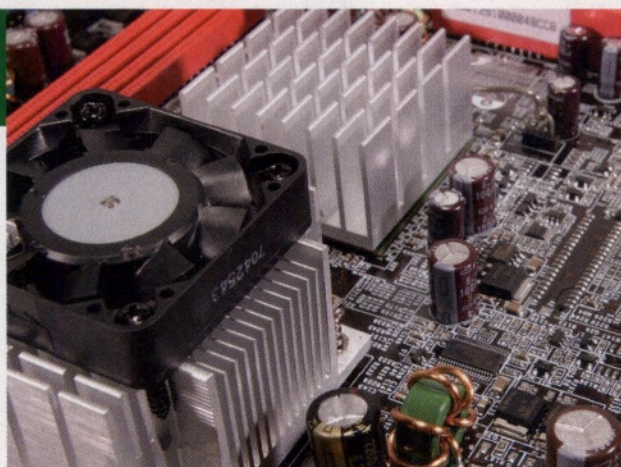
generates a performance penalty. To cut a long and tedious story short, CPUs make predictions about future instructions. The longer the pipeline, the further ahead the prediction. But also the further back a CPU has to retrace its steps if it has made an incorrect prediction. Interestingly, the Athlon 64's pipeline length is closer to the Pentium-M's – 12 stages for integer instructions and 17 stages for floating point.

But don't forget that Pentium-M is just one part of the Centrino mobile platform – a set of technologies that has been optimised for parsimonious power, not outright poke. Compared with the P4's 800MHz system bus and dual channel DDR2-533MHz memory and the Athlon 64's 1GHz HyperTransport link and dual channel DDR-400MHz, the Pentium-M must make do with the 855G chipset's single channel DDR-333MHz and a lowly 400MHz bus. Even the recently announced second generation Alviso chipset for Pentium-M only bumps the bus up to 533MHz.

In that context, the performance of the Dothan-spec 2.0GHz chip supplied to

"If it's dizzying clock speeds and scorching multimedia performance, Pentium 4 is your man. For everything else, the Pentium-M is very likely to make the Athlon 64 look pretty silly"

us by leading UK hardware web retailer Overclockers.co.uk is damn impressive, even if it can't match the desktop chips. But we knew the Pentium-M was capable of more. Bumping up the system bus to 460MHz (the highest we could convince the DFI 855GME MGF motherboard to tolerate without delving into voltage tweakery) delivers a Pentium-M running at 2.3GHz. At that speed it frankly grinds Intel's flagship Prescott P4 processor into the dust for gaming grunt, matching it in *Far Cry* and spanking it in *Doom3* and *Counter-Strike: Source*. And that despite a deficit of fully 1.5GHz. Of course, in our media decode and encode tests, the P4's clockspeed advantage pays off. That's very likely down to the importance of SSE instruction performance in those apps. In our experience, comparing the current CPU



Dothan consumes less than half the power of either Intel or AMD's fastest desktop chips.

architectures available, SSE compute power is rigidly locked to clockspeed.

Compared to AMD's Athlon 64 4000+ (that's a 2.4GHz chip), it's clear that clock for clock, there's little or nothing to choose between the two. Whether it's gaming or media handling duties, the Pentium-M at 2.3GHz more or less matches it. The only difference, of course, is that Pentium-M runs so much cooler and uses so much less power. And don't forget that's running on an AGP 4x graphics bus and a much slower system bus. So much for the power of PCI Express, eh?

It's simply amazing that Dothan achieves all that courtesy of the tiny heatsink that comes with the DFI board. But even harder to believe is the following fact: running at 2.3GHz and under heavy load and chewing on high-fat, high-definition video, the heatsink was cool to the touch. We're desperate to know what Dothan might be capable of when fed with more voltage, a bigger heatsink, a modern bus and support for fast memory on a dual channel controller. We're confident it would hammer even AMD's \$1,000 FX-55 CPU. In fact, we suspect that the arrival of the new Alviso chipset along with a larger heatsink and a modest voltage tweak will be enough to see off AMD's finest. And that's why we're calling the new Pentium-M the fastest gaming chip ever. No contest.

Jeremy Laird

P4 on the left, Pentium-M on the right. Proof that power can come without furnace-like heat.



PCF SAYS... "Pentium-M on the desktop? Nothing less than a revelation. Quite simply, the fastest gaming chip around."



WE WANT ONE

ATI Radeon X800 XL

Flagship performance for chump change is the holy grail of PC graphics. And that's just what ATI has delivered. Possibly

"There's little to choose between this new entrant and existing top-end cards"

Price £199 approx Manufacturer ATI Web www.ati.com

Brace yourself: ATI has launched yet another mildly tweaked high/mid range (or should that be low/high end?) graphics card. Oh, joy.

But don't run screaming at the very thought of yet another tedious treatise on the benefits of a 16 pixel pipeline monster you can't afford. If the UK price gets anywhere near the official \$299 ransom demanded in the US, this card will revolutionise your expectations of the kind of performance you can afford, because the X800 XL comes awfully close to delivering a gaming experience identical to range-topping £400 cards. Building cheaper computer chips is often a matter of making them smaller. And that's just what ATI has done with its impressive, if rare, X800 GPU. A shrink in manufacturing process from 130nm to 110nm has delivered a chip around 20% smaller, despite retaining the entire X800 feature set. So that's 16 pixel

pipelines, six vertex units, hardware DirectX 9.0b support and the rest. But remember, this is a PCI Express-only chip for now. ATI's bridge chip will enable AGP versions later this year. Probably. Of course, smaller manufacturing processes are also associated with clockspeed bumps. But not in this case. ATI's main aim with R430, as the new chip is known, is affordability. So out goes the clockspeed-friendly but expensive Low-K technology featured on all previous X800 products.

HARD CORE

A core clockspeed of 400MHz is the result. That compares with 540MHz for ATI's latest and greatest X850 XT PE flagship board. Interestingly, the XL's memory clocks in at 490MHz, just 90MHz shy of the X850. Arguably, that makes the XL the better balanced board – it's less likely to be starved of memory bandwidth.

In practice, unless you're running the latest games at resolutions of 1,600x1,200 or more there's little to choose between this new entrant and existing top-end cards. And even if you are, the 20% performance difference is

harder to detect in-game than you'd imagine. But how does it compare with the other "affordable" 16 pixel pipeline card, namely NVIDIA's GeForce 6800 GT? Well, we'd probably ignore the artificial advantages in *Doom 3* and *Half-Life 2* held by NVIDIA and ATI respectively. Better to concentrate on our *Far Cry* results as a good indicator of DirectX 9 performance in an advanced game engine that's been well optimised for both ATI and NVIDIA's products. And there's really nothing to choose between the two.

So it's all down to price – our score below only counts if the X800 XL comes in below £200. If that happens, it'll be no contest.

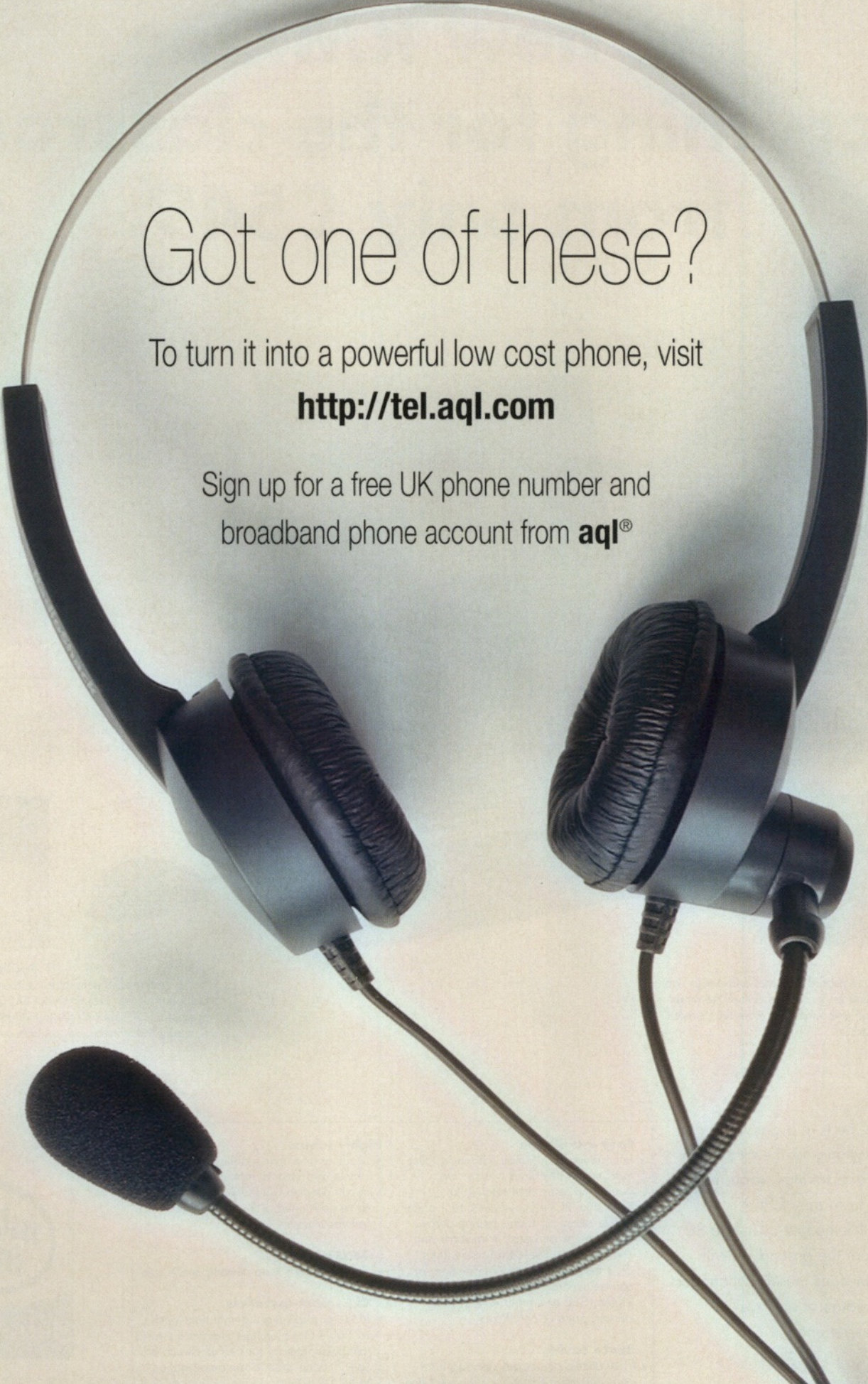
Jeremy Laird

BENCH MARKS	CS:S 1,600x1,200 4x AA, 8x AF	FAR CRY 1,600x1,200 4x AA, 8x AF	DOOM 3 1,600x1,200 4x AA, 8x AF	3DMARK 05 1,024x768 default
X800 XL	75	36	29	4767
6800 GT	62	36	39	4105

More benchmarks and details can be found on your DVD

Core clockspeed	400MHz
Memory	256MB, 490MHz GDDR3, 256-bit
DirectX support	Shader model 2.0b
Interface	PCI Express
PSU required	250 watt (estimated)
Outputs	VGA, DVI, S-Video

94% PCF says... "UK pricing permitting, the no-contest choice for savvy gamers."



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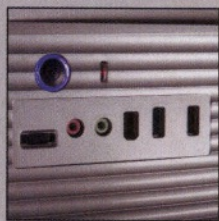
Hard-screen LCD

A hardened screen cover protects the fragile TFT. The screen is available in 15" or 17".



Keyboard stow

A unique stowaway area behind the screen keeps the keyboard safely stored, maximising desk space for text book work.



Front facing ports

Front facing ports, including Firewire as standard, provide easy connectivity for pupils with memory drives, headphones and even digital cameras.



Teacher friendly

A "listen class" single monitor off and speaker mute button lets you quickly swap the class from group computer work to whole-class teaching.



Cable clamp

Grip your mouse, keyboard, Ethernet and power cables safely together using an innovative clamp. No more wandering mice or keyboards. No more time wasted plugging leads back in.



Resilient outer casing

Anti-graffiti paint hides and repels scratches and ball-point pens – ensuring your RM One stays neat and presentable. Grubby finger marks and dirt build-up are easily hidden too, with a black outer finish covering.

The new RM One is in a class of its own. Bringing everything for the classroom together – space savings, robustness, security, and from only £549, affordability. It's the first all-in-one PC developed from the ground up with teachers, technicians, network managers and over 30 years of our own educational experience.

Easy installation

- Integrated carry handle allows installer to transport RM Ones two by two, quartering setup time relative to traditional PCs
- Easy-access rear panel makes plugging-in and tidying away cables quick and easy
- Versatile and compatible, suitable for use on RM's CC3 network or as a WindowBox, or can be used on other networks such as Viglen, CSE or Ranger
- Affordable starting price of only £549

Space saving

- Easy access, keyboard clearing front ports and volume control
- High resolution 17" LCD option increases on-screen space

Highly robust

- Modular interchangeable screen – simple and easy to replace
- Full-size sturdy desktop CD ROM and floppy drive positioned at the side prevents failures from fiddling

Secure

- Security screws keep all components safe

Classroom essentials

- Ideal for pupil sharing with light-touch rotatable feet
- Quieter classrooms with low noise internal fans
- Full choice of specification, from basic email station to full DV editing system.



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GLORIOUS WIDESCREEN

Dell UltraSharp 2005FPW

Welcome to the wonderful world of widescreen, whether you like it or not

Price £495 Manufacturer Dell Web www.dell.co.uk

Widescreen, dear readers, is the way, the truth and the light. And if you don't agree, then you should. Movies have been widescreen for decades. TVs have now been assimilated and many laptop PCs, likewise. God dammit, human stereoscopic sight is widescreen.

In fact, we don't know anyone who has spent a significant period in the company of a high resolution widescreen PC display that hasn't converted and become a true believer. Granted, the dual-document or webpage-viewing and movie-watching advantages of widescreen are less obvious on smaller, lower resolution panels. But don't believe the naysayers who squeal about widescreen gaming incompatibilities. Most 3D games being released now support widescreen or can be tweaked to support it.

TWENTY GOOD INCHES

Whatever, what we have here is 20 inches of 16:10 aspect ratio (compared with 16:9 for TVs), high definition goodness. OK, so the native resolution of 1,680x1,050 doesn't quite match the top-end HDTV standard. But it delivers a generous dollop of screen real

estate, nonetheless. And just a few hours in front of this monitor will be enough to have you convinced of the basic rightness of the form factor.

In terms of image quality, it's mostly very good news. For sure, the 2005FPW can't compete with the likes of Sony's X-Black monitors for pure visual clout. But with fast 12ms response times, strong brightness that does justice to the 300 cd/m² rating, excellent contrast and impeccable viewing angles, there's little to criticise.

When we first received this monitor, Dell was pricing it a 2005FPWt a frankly offensive £616. Offensive, that is, when you consider it's available Stateside for around £400. However, Dell has since dropped the price to a much more merciful £495 (including delivery). While this doesn't quite represent the end of "rip-off Britain", it is at least a start. **Jeremy Laird**

Screen size 20-inch, 16:10

Native resolution 1,680x1,050

Brightness 300 cd/m²

Inputs DVI, VGA, S-Video, Composite

89% **PCF says...** "The monitor we've been waiting for. If only it was cheaper."

SHAME ABOUT THE GLOSS

Samsung SyncMaster 913N

Think your 12ms LCD panel is so-clever? Samsung has something to show you...

Price £299 Manufacturer Samsung Web www.samsungelectronics.co.uk

Spare a thought for the dedicated engineers at Samsung Electronics. How tirelessly they must have toiled to whittle the 913N's response times down to a vanishingly small 8ms. And how tenacious their travails in achieving a contrast ratio of 800:1. Problem is, in the wake of CTX's Neon-Life and Sony's X-Black glossy display technologies, life for multimedia monitor manufacturers has become very hard.

It's not so much the seen-it-before 19-inch form factor, bog-standard 1,280x1,024 native resolution or plasticky and anonymous chassis that lets the 913N down. We're willing to forgive all that in return for first class visuals. No, what really disappoints is the failure of perhaps the strongest on-paper specifications we've ever seen to translate into compelling image quality.

GAME AWAY

You won't find any manufacturer quoting better than 8ms response times. But hard though we tried, we completely failed to detect a subjective advantage over 12ms, and even the best 16ms, panels currently available. Without doubt, this is a swift and responsive

monitor for gaming and video. It does not, however, raise the bar.

More impressive are the deep and inky blacks delivered by the 800:1 contrast ratio. Despite a strong brightness rating of 300 cd/m², there's very little light bleed and the overall effect is pleasingly dynamic. Unfortunately, we're less than thrilled by the colour balance. The absence of digital DVI connectivity is probably an aggravating factor. Whatever, no amount of OSD menu juggling achieves a truly ideal setup.

And finally, in the gripe column, the viewing angles are nothing more than decent by today's exacting standards.

Overall, it's hard to get excited by this display despite the best-in-class specifications. The harsh truth is, for the multimedia model we favour, the glossy panels from CTX and Sony are simply more vivid and punchy. **Jeremy Laird**

Screen size 19-inch, 5:4

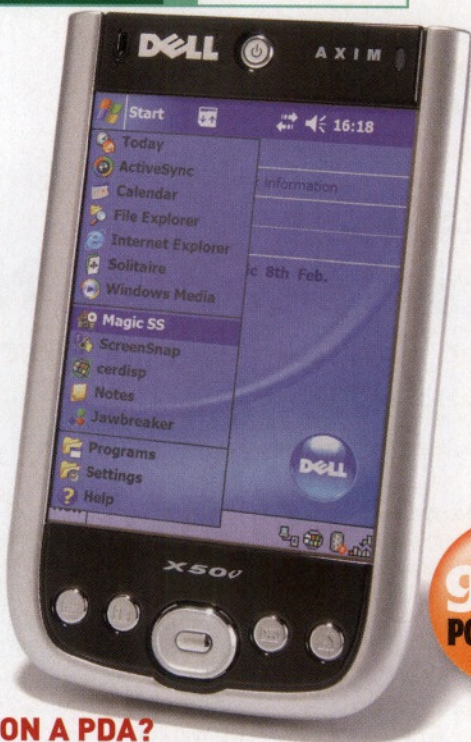
Native resolution 1,280x1,024

Brightness 300 cd/m²

Inputs VGA

72% **PCF says...** "Competent all-rounder, but lack of DVI port is critical error."





gold
PCFormat

DVD ON A PDA?

Dell Axim X50v

You've waited, and it's finally here:
the PDA that can play DVDs... kind of

Price £289 Manufacturer Dell Web www.dell.co.uk

Dell is the undisputed World Heavyweight Champ of all things PC-related. Add the any-colour-so-long-as-it's-black design ethic, and there's a sinister whiff of world-domination about the Round Rock, Texas giant's products. But the upside of its huge market clout is Dell's ability to occasionally pip the competition to the post with cutting edge technologies. And so it is with this deeply desirable PDA.

OK, so there's only one truly novel component, namely Intel's swanky new 2700G mobile graphics processor. But boy, does it make for a killer combination in concert with the range-topping 624MHz Intel XScale CPU and luscious VGA display. In short, this is the first PDA capable of decoding full DVD-quality video. It's tough to describe just how stunning movies look on the 3.7-inch touchscreen. As a comparison this Dell is displaying four times the number of pixels of Creative's Portable Media Centre unit.

The flabbergasting pixel density of that 640x480 screen resolution also comes in handy for displaying Excel spreadsheets and web pages (if only Internet Explorer mobile wasn't an uncooperative beast). This is possible thanks to support for several video codecs, such as MPEG4 and WMV9, and a

faintly ludicrous (for a PDA) 16MB of dedicated video memory. The 2700G also boasts a raft of 3D acceleration features based on Imagination Technology's PowerVR desktop graphics tech.

Other plus points include good build quality, an impressively compact form factor and a reasonable price. Nevertheless, there are one or two niggles that prevent the X50v from achieving pocket media player perfection. For starters, it's blighted by the inclusion of Window Media Player Mobile 10. While it brings better support for video playback, it also removes the ability to control playback when Media Player is in the background. Worse, however, is a general lack of zip. Handwriting recognition is particularly tardy. We would blame the demands made by that high-res display, but HP's similarly-equipped hx4700 copes a great deal better. **Jeremy Laird**

CPU 624MHz Intel XScale

Memory 64MB SDRAM, 128 Intel StrataFlash

Graphics Intel 2700G 16MB

Display 3.7-inch VGA

Connectivity Wi-Fi, Bluetooth, IR

Expansion CF, SD (SDIO compliant)

90% PCF says... Powerful and well made, with great video performance.

FEATURE-PACKED PDA

HP iPAQ hx4700

It's big, it's bad, but a lack of video grunt means it's also a little sad

Price £434 Manufacturer HP Web www.hp.co.uk

For technology pundits around the globe, poo-hooing PDAs in the face of smartphones is a popular hobby. After all, worldwide sales of Pocket PCs have been flat for the last year or so. But that hasn't prevented a brave new generation of conventional PDA powerhouses from turning up for duty.

At first glance, HP's hx4700 is comfortably the most impressive of the lot. If there's such a thing as a PDA with attitude, this is it. From the dark and moody chassis to the tinted plastic flip-out screen protector, the design is straight out of the 'Lord Vader' chapter of the book of geek chic. The specs list is equally out of this world. The four-inch touchscreen is vast for a PDA and matches the Dell Axim X50v, reviewed opposite, pixel for pixel with a massive native resolution of 480x640. Likewise, HP has selected the latest and fastest iteration of Intel's XScale processor, clocking in at 624MHz, while the wireless connectivity and expansion bases are fully covered thanks to 802.11b Wi-Fi and Bluetooth, and CF and SD slots.

That is all par for the high-end PDA course. What you won't find on any other PDA, however, is the hx4700's unique touchpad. Along with the Synaptics NavPoint software, the touchpad delivers a control system which boasts precision that is unnervingly similar to a desktop PC's. It's very

impressive, and enough to have you wondering whether you really need to lug that notebook around. That said, we're not sure exactly why you'd want to use the touchpad in preference to using a stylus on the screen (which is itself a larger, more accurate touchpad after all).

Regardless, overall system performance, and handwriting recognition in particular, is subjectively a cut above the Dell Axim X50v. With one exception. HP's finest is lacking the Intel 2700G video accelerator. In terms of video playback, then, the gorgeous VGA screen is wasted. Without support from a dedicated video chip, the XScale simply doesn't have enough clout to run DVD-quality video. **Jeremy Laird**

CPU 624MHz Intel XScale

Memory 64MB SDRAM, 128 Intel StrataFlash

Graphics None

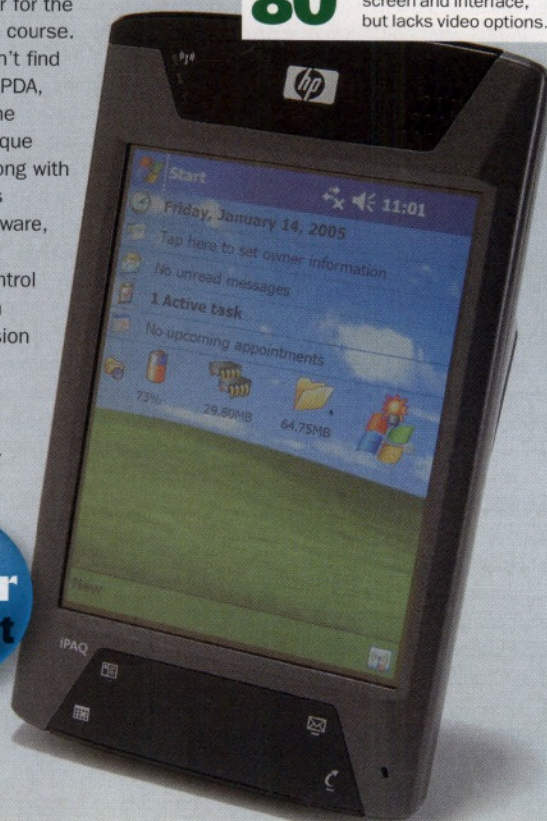
Display Integrated four-inch VGA

Connectivity Wi-Fi, Bluetooth, IR

Expansion CF, SD (SDIO compliant)

80% PCF says... "Has a lovely screen and interface, but lacks video options."

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CHOOSE A COLOUR, ANY COLOUR

µ(mju)-Mini

A camera to match your lifestyle – the µ-Mini is cute and practical too



Price £250 Manufacturer Olympus Web www.olympus.co.uk

Never mind 8MP chips, 10x zooms and image stabilisers. Sometimes you just want a camera to take snaps with. The µ-Mini is perfect – a smart little camera you can stick in your pocket and carry round. There are no gimmicks, but there's nothing to learn either.

So why pay £250 for that? Because the µ-Mini is also very cute. It seems like three centuries ago that Canon's Digital Ixus introduced the idea of miniature digicams. Now everyone's doing them. And the µ-Mini is a lot smarter and neater than any Ixus.

There's that curved, skewed design, for a start, and the choice of six colours (silver, white, black, crystal blue, velvet red and copper orange). It's a camera you can accessorise. Having said that, the white, black and silver options are likely to be best for male owners – the others are definitely handbag territory.

EASY DOES IT

The curved corners mean the µju slides in and out of pockets without dragging out the lining. The start-up time's not much more than a second, and the controls are so simple it's a doddle to use.

On the top is a rotating knob for still, movie and playback modes, and for most shots that's

all you need to know. There are 13 different 'scene' modes accessed by buttons on the back if you want to get flashy, but no manual control over shutter speed or aperture. The 'weatherproof' construction could be handy in sudden showers. There's an optional waterproof housing (down to 3m) for extreme sports fans, too. The 2x optical zoom is a bit of a let-down, though, when most rivals have a 3x zoom.

Picture quality is OK, but don't look too close. In dim lighting the ISO's increased automatically and definition suffers as a result. Outdoors in good light, though, it's pretty good. Exposure, contrast and colour saturation are fine.

£250 is still a lot for 4MP though, so look out for discounts. The Pentax Optio S50 and HP PhotoSmart R707 both give you 5MP and sell for around £200. Neither can match the µju Mini for style, mind.

Rod Lawton

Resolution	4MPs
Memory	xD Picture card
Lens	2x zoom
Dimensions	95x55.5x27.5mm, 115g
Needs	500MHz CPU, 128MB RAM, 300MB HD

81% PCF says... "The µ-Mini is sexy and cute, but you pay for it."

LET THE MUSIC FLOW...

Terratec Noxon Audio Player

Stream audio over a wireless network. Haven't we heard that somewhere before?

Price £100 Manufacturer Terratec Web en.terratec.net

Better late than never, they say. But is it? Terratec, the TV and soundcard manufacturer, has moved into the arena of streaming audio. But we think it's tardy for doing so. It's been a year since Netgear chucked its MP101 streamer into the market. We reviewed it in issue 161. It's even longer since Linksys did the same.

But we shouldn't get so worked up about these things, because the Noxon is a product that can do a decent job. That's not getting away from the fact that some of the edges are a little ragged. The display, for example, is fine when you look at it straight on, but it's as clear as a winter's day in Cleethorpes when you look at it from an angle. And it's an awful-looking and cheap-feeling blob of plastic.

IT'S BOXY

The software, too, is lacking. You'll need to get hold of software such as Musicmatch Jukebox to serve your music for you – a simple weblink is included on the CD. But if you haven't got broadband, that's a full 24MB download. Not good enough chaps, when we're paying this kind of money.

The Noxon's saving grace is its ease of setup (that weighty download aside, of course). We have WEP encryption on our wireless network, but it coped admirably, and a simple wizard helps you locate your network of choice. Also rather good is the internet audio function. Unlike other network streaming devices – such as the MP101 – it's not subscription-based. You simply browse stations by country. And it works. Straight away.

But, given the choice, we'd go out and buy the Netgear MP101 instead. After all, it's available for a shade over £80. If you're really serious about audio streaming, go for one of the Philips Streamium devices we looked at last issue. They might be criminally more expensive, but they're oodles better.

Dan Grabham

Wi-Fi standards 802.11g, 802.11b

Wireless security 64/128 bit WEP

Formats MP3, WMA

Connections 3.5mm audio

Connectivity Access point, ad-hoc

62% PCF says... "Easy to set up, but those ragged edges cost it dearly."





BOARD STUPID

DiNovo Media Desktop 2.0

It's new, but we've seen it before... cheers for the *déjà vu*, Logitech

Price £145 Manufacturer Logitech Web www.logitech.com

What does the suffix 2.0 mean to you? You'd be forgiven for thinking that it signifies a completely new version of a product. Clearly though, some manufacturers don't share your logically-thinking view.

One of those is Logitech. When it asked us if we'd like to take a look at its new DiNovo 2.0, we jumped at the chance. The original was a high-end keyboard set for those with more money than sense, so surely Logitech would have made some physical refinements to its high-end deskset. Has it corrected the lack of spring in the keys, for example? And surely it could have got rid of the joint PS/2 and USB connection too? Or situated the PC connector away from the mouse hub and produced a simple Bluetooth dongle, as Microsoft has done on its Bluetooth desksets? Alas, no.

BIT PARTS

When we pulled the DiNovo from its box, we thought it was April Fool's Day. All the components looked exactly the same, for all the difference that'll make. The dodgy keys are still present, there's still no innovation in terms of connectivity, and the really galling thing is that you're expected to pay £150 for it. (Well, I like it - Ed).

That said, the optical mouse's power consumption has improved, and Logitech has overhauled the multimedia element of the kit. In

case you don't know, the separate numeric keypad doubles as a media remote for your PC. You can pause and play songs, and track details appear on the CD screen above the keys - as do MSN messages. The new version of the pad supports software other than the bog-standard Windows Media Player, including *iTunes*. In fact, by binning its Microsoft attachment, the MediaPad has evolved into a far more useful device, even if compatibility with *Yahoo! Messenger* probably isn't at the top of anybody's wish list. However, it will show details of your messaging apps, and control *Musicmatch Internet Radio* as well as *Winamp*, but this is still not enough to make you shell out £145. Logitech should know this. Sadly, the product blurb proffering Bluetooth 1.2 and file exchange with your mobile phone (even if you don't have Service Pack 2 installed) isn't quite enough to sway us, either.

So the new DiNovo is an improvement in luxury terms, but if you must have one, do yourself a favour and pick up a version 1.0 for half the price. **Dan Grabham**

Connectivity USB and PS/2

Mouse functions Customisable buttons

Bluetooth support Version 1.2

Needs Windows XP/2000

65% PCF says... "Design faults still hold back the ultimate deskset."

POWER HUNGRY?

Enermax Noisetaker 600W

A power supply for the SLI generation? That'll be the 600W beast from Enermax

Price £115 Manufacturer Enermax Web www.coolergiant.co.uk

Two years ago, buying a PSU was pretty straight forward. Simply work out your wattage needs and plump for the best unit your budget allowed. Fast forward to 2005 and things have started to get out of control.

For starters, SATA disk drives requiring new-style connectors have become the norm. Then there's the new 24-pin main power rail and six-pin graphics connector that have appeared with the arrival of the PCI Express platform. Adding to that is the ballooning power consumption of key components such as CPUs and graphics cards, not to mention the increasing emphasis placed on near silent operation. So, there's now more chance than ever that an inadequate PSU could hold back your system's performance.

it's just affordable enough to be a mainstream product.

With four SATA, seven molex, two floppy and a single PCI Express graphics connector, it's hard to fault in terms of connectivity, although NVIDIA SLI owners might prefer a pair of PCI Express graphics connectors. Likewise few would quibble with the on-paper power specifications. The two independent 12 volt rails deliver a total of 35 amps, enough to run a pair of SLI'd GeForce 6800s. Even better, in operation it's awfully near silent when the adjustable fan speed is at its lowest setting, and this was true for the P4 Extreme Edition and GeForce 6800 GT configuration of the PCF test rig. **Jeremy Laird**

POWER TO THE PEOPLE

In that context, it's not terribly surprising that we've arrived at this: the 600 watt power supply. There are, of course, higher rated PSUs on the market, but most are exotic devices with equally rarefied prices. At £115 the Enermax Noisetaker ain't cheap, but

Total power 600 watts

Power rails 3.3V 34A, 5V 34A, 2x 12V 18A, 5Vsb 2.5A

Connectors 24/20-pin ATX, 4x SATA, 7x Molex, 2x floppy

Fans 1x 80mm, 1x 120mm

Other Manual/automatic fan speed

85% PCF says... "Not cheap, not pretty, but quiet and very powerful indeed."





DLP NIRVANA

Toshiba TDP TW90

Happiness is 2,200 lumens and a native resolution of at least 1,024x768 pixels

Price £1,439 Manufacturer Toshiba Web www.toshiba.co.uk

For your average geek, big-screen fun is the final, unobtainable frontier. With the price of most hardware relentlessly tumbling, a truly cinematic display is arguably the only seriously desirable piece of PC kit that remains out of reach to the great unwashed.

At nearly £1,500, this high-spec projector does little to combat social inequality. But for those of you bold enough to dream or committed enough to make the necessary sacrifices, is it worth it? On paper, at least, the blinding 2,200 lumens brightness rating, 2,000:1 contrast ratio and use of cinema and gaming-friendly DLP technology are bang on the home-cinema-nirvana money. As for the native resolution of 1,024x768, it's nothing less than we'd expect at this end of the market. While not quite High Definition (that accolade requires 1,280 horizontal pixels or more), it certainly minimises the 'grid' effect suffered by less advanced machines.

As ever with projectors, however, you'll have to accept an image quality compromise or two. While we certainly wouldn't take issue with the brightness rating, we're a little disappointed to note that the common DLP bugbears, excessive contrast and iffy colour reproductions made another

unwelcome appearance when this unit was tested.

In terms of black to white contrast, the TDP TW90 is a little all or nothing – either dingy with a lack of detail or full retina-searing rehear. Attempt to tweak the image via the comprehensive OSD menu and you'll quickly discover you must choose between colour accuracy or brightness and visual punch – having both together simply isn't possible. But let's be clear, this projector still kicks out a fab movie image, but for the money we demand near perfection.

Of course, the last word in anally retentive colour accuracy is less important for large-screen gaming. And that's where this projector really shines. Play 2,200 lumens-worth of DLP-powered *Half-Life 2* running at 1,024x768 with 4x anti-aliasing and you'll weep when forced back to your LCD or CRT monitor.

Jeremy Laird

Light engine Texas Instruments DLP

Native resolution 1024x768 (XGA)

Brightness 2,200 lumens

Inputs RCA, S-Video, Component, 2x VGA, audio (mini jack)

Other 802.11b/g Wi-Fi connectivity, VGA-out, integrated speaker

78% **PCF says...** "All the benefits and pitfalls of high-end DLP in one box"

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GRAPHICS CARDS

PRODUCT	EX. VAT	INC. VAT
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PNY GeForce 6 6600 GT 128Mb PCI-E	£133.58	£113.69
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PRODUCT	EX. VAT	INC. VAT
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MOTHERBOARDS

PRODUCT	EX. VAT	INC. VAT
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AOpen AK79D-400VN - Mainboard - ATX - nForce2 Ultra 400 - Socket A - LAN EN, Fast EN -IDE	£33.75	£39.66
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NETWORKING

PRODUCT	EX. VAT	INC. VAT
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AMD Sempron 2800+ 2.0GHz 256Kb Cache 333MHz FSB Socket A Processor	£62.40	£73.32
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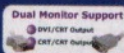
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- Memory: 128MB DDR3, 1.6 ns, 1100MHz
- Memory bandwidth: 128 Bit
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HEAD-TO-HEAD

High capacity Flash storage

It's megabyte mania down at Storage Central; [Dan Grabham](#) goes to town, sorting frugal Flash drives from traumatised thumbsticks...

People like to fiddle, and it's people who pose the biggest threat to your USB Flash drive. It's unlikely to get damaged in your pet dog's slobbering grasp, and you probably won't step on it.

No, instead it'll be the war of attrition waged upon your drive by your mates. "Oh, you've got one of these now," they'll say as they pick it up off the table and spend a few minutes pulling off the lid and putting it back on repeatedly. Call us petty, but we find that damned annoying. But for all the other damage done as our flash drives are thrown on pub tables, occasionally dropped on the way home and smashed against the our front doors as we try and gain access after a few beers, nothing quite matches the carnage wreaked unintentionally by a friend.

After all, these things are designed to hold your entire life. Or, at least,

contain pretty much everything you need for the digital parts of it. A couple of years ago, the USB Flash drive was a novelty. Now, they're a ubiquity, with prices falling almost as fast as capacity increases. How big a drive do you need? We reckon on 512MB being more than enough to store a spattering of digital photos, all your current work plus a load of regularly used utilities.

Do you really need more? The idea of carrying 2GB round in your pocket is most appealing, if only for bragging rights. So we decided it was high time we took a few of the land's most capacious USB drives and put them under the PCF spotlight.

HOW WE TESTED

These blighters are designed to be used all day, every day. So, after we took them to the photo studio, each one had a turn in our hardy PCF pocket. And by God, did they get some stick. Once that was done with, we

timed how long it took to write a 100MB Zip file to the drive, giving us a real-world write speed to compare between the drives. Finally, we had a look at the other features that were provided for the price.

High capacity Flash drives tested



Iomega Micro Mini

£100

Manufacturer Iomega Web www.iomega.com

You'll have to chain this drive to something solid, as it's very easy to lose. Sadly, that's not its only fault. If you can afford a Flash drive with 1GB of storage, you're probably carrying some pretty serious stuff around. Stop there then, because in that case you'd better go and buy yourself something a bit sturdier. Although the flip-out design is

novel, a few weeks in a pocket is pretty wearing on this little friend. The outer sleeve offers no protection from damp or dust for the USB plug, and that's got to be bad news. The design is better suited to a 16MB drive found in a Christmas cracker. And the different colour sleeves shows it's only suitable as a novelty item.

Capacity 1GB

Write speed 9.30MB/s

Security No on-board software

Weight 9g

Other features Iomega Active Disk

70% PCF says... "Good write speed, just a shame about the body – not recommended for truly important data."

Buffalo RUF-CIG

£68

Manufacturer Buffalo Web www.buffalo-tech.com

If this was a beauty pageant, this one would lose by a country mile, and then some. Do Buffalo really think we'll like this rather grotesque semi-transparent blue plastic finish? Still, for just under £70 you do get a rather sturdy drive casing, even though we reckon you'll end up losing the easily detachable cap down a drain on a rainy Monday

morning, or chewed up by the dog overnight. Like all the drives in this test it's got a hook so you can attach it to your keyring. Your data is also pretty safe; there's a write protect slider in case you lend it to a friend without any sense. It's like a more sophisticated floppy, you know, just a lot smaller and with a dust cap that'll be lost within days.

Capacity 1GB

Write speed 6.51MB/s

Security Write protect switch

Weight 12g

Other features Comes with USB extension cable

65% PCF says... "Blue isn't the colour. Looks plasticky has a clumsy dust cap and has an average write speed. Nothing to write home about."

SanDisk Cruzer Micro

£35

Manufacturer SanDisk Web www.sandisk.com

Available in capacities up to this half-gig version, the Cruzer Micro is pretty darn tiny, and the price tag's far from hefty, either. The clear plastic shell doesn't look too bad, either. And the cap is quite hard to put back on, so it'll probably be some time until it wears loose. However, we did manage to lose it while we were testing. But we have

a multitude of reasons to explain that. One of the most interesting things about this drive is its compatibility with SanDisk's £40 MP3 Companion device – simply plug the drive in its side and you can play the MP3 tracks contained thereon. Rather natty, even if a MuVo would be more preferable for the purpose.

Capacity 512MB

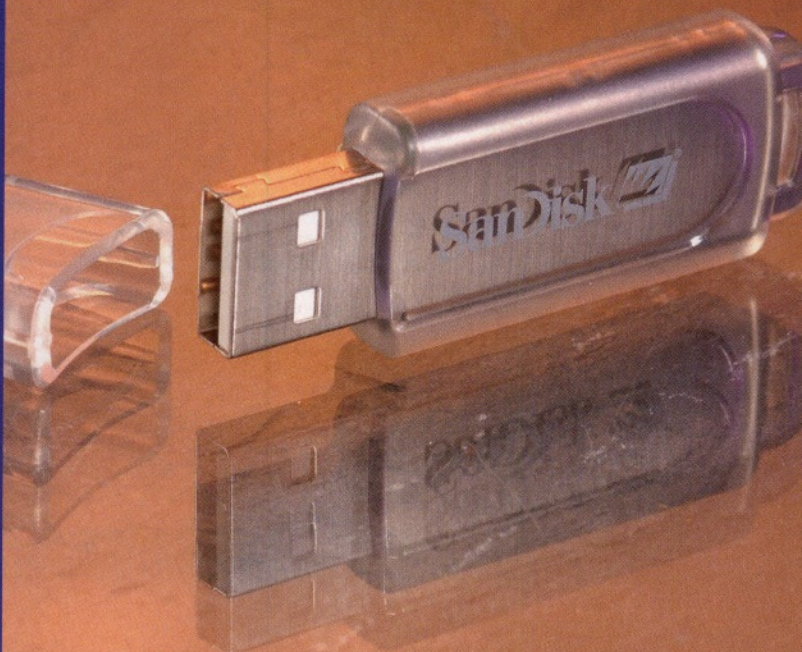
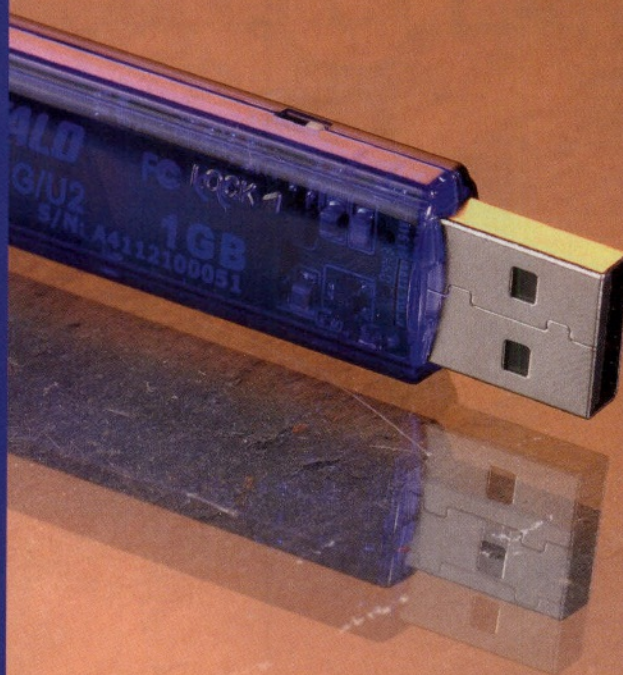
Write speed 7.34MB/s

Security CruzerLock2 file protection software

Weight 13g

Other features Trial of CruzerSync software

75% PCF says... "It's a good value purchase that doesn't look too bad which has multi-function capability and a secure dust cap."



"If you want quality and toughness, you're looking right at it"



Disgo Pro

Manufacturer Disgo Web www.mydisgo.com

£160

Traditionally Disgo make some of the hardest Flash drives around. Trouble is, this has also meant that they aren't exactly pocket-sized. The 1GB version we've been carrying around for the past year is absolutely huge. So it's a blessing that Disgo has reduced the physical size of the body while bringing the weight down to an indiscernible 15g. Trouble is, there's no weight to it. But it's certainly not light on

space; the capacity has also been increased, and is now an outrageous 2GB, although at this price a Microdrive MP3 player offers more. Despite its new svelte shape, the Disgo is also surprisingly lightweight, too. But, if you've enough money, you're hardly likely to plump for a nondescript make because it costs less. If you want quality and toughness, you're looking right at it.

Capacity 2GB

Write speed 10.28MB/s

Security KeySafe encryption software

Weight 15g

Other features MyKey admin software

85%

PCF says... "Sometimes you have to pay for quality. And the Disgo has that in spades. Hardy, lightweight and with a capacity of a five year old PC."

Pocket money pages

WE ROUND UP THIS MONTH'S SUB £100 HARDWARE



Linksys Wireless-G Print Server

Add a printer to your wireless network for next to nothing

Price £63 Manufacturer Linksys Web www.linksys.com

So you've set up your spangly new wireless network, and now you can use your laptop while sat on the toilet. But while being wireless is extremely useful most of the time, it's not ideal when you want to print stuff out. Enter stage left, then, this wedge from Linksys.

The Print Server enables you to take virtually any USB-enabled printer and add wireless connectivity to its list of attributes. It even has a 3MB print buffer. If you've got a multi-function device though, forget it – this unit is only good for straightforward printers. If you have a wired network, you can plug this in to your router too. The device's USB port is compatible with both USB 1.1 and 2.0 printers, while it also supports wireless encryption. So, on paper the WPS54G is pretty impressive. Indeed, the theory is only let down by the tricky installation – the Setup wizard refused to find the print server, despite it being wired into our Linksys router. After some experimentation it worked, but this process really should be easier.

Wi-Fi 802.11b, 802.11g

Frequency 2.4GHz

Security WEP, WPA

Connectivity 10/100 wired Ethernet, 1 x USB 2.0

78% PCF says... "Exceptional value, providing you get past the patchy setup."



Migo 64MB

Price £54 Manufacturer PowerHouse Web www.4migo.com

A flash drive with a difference, so to speak. We're seeing a lot more products that enable you to back up your life, available in 64MB upto 2GB capacities, it enables you to back up information from your PC. Just plug the drive into your PC, and it'll synchronise all your settings and Outlook email. Hey, it even backs up your desktop wallpaper. Obviously the idea is that any PC you work on will seem like your own, since you can log into the Migo on a different machine and retrieve your settings. Handy, eh? It's a safe bet you'll probably need a bigger capacity than this paltry 64MB, though.

76% PCF says... "Move between different PCs seamlessly."



Lindy USB 2.0 Expander

Price £60 Manufacturer Lindy Web www.lindy.com/uk

You can spend hours looking at Lindy's website. Just like Maplin's, the sheer amount of stuff it sells is baffling, as this cable attests to. It enables you to extend a USB cable by using a conventional and cheap Ethernet cable to bridge the gap – you can create an extension of up to 50 metres. That's pretty impressive, especially if you have a USB device that you simply can't add to a your wireless network, such as a standard webcam. But hang on, is it really £60? We're a little disgruntled by this, especially as you have to add a length of Ethernet cable yourself.

58% PCF says... "Useful perhaps, but hardly cheap. Ha!"



Crucial Ballistix Tracer

Price £86 Manufacturer Crucial Web www.crucial.com/uk

As if the original DIMMS of Ballistix RAM weren't enough to make you squeal with delight, Crucial has painted it black. But what else is different? It now has a set of red and green LEDs on top, of course. What more could the discerning modder want? The LEDs change dependent on how the system is being used. Get it? No, neither do we. Basically, they light up depending on the amount of activity passing through the memory bus. Whether you'll actually want them is something else. Unless your case is clear, there's no need to buy them over conventional Ballistix.

75% PCF says... "You don't need them. But they'll still sell..."

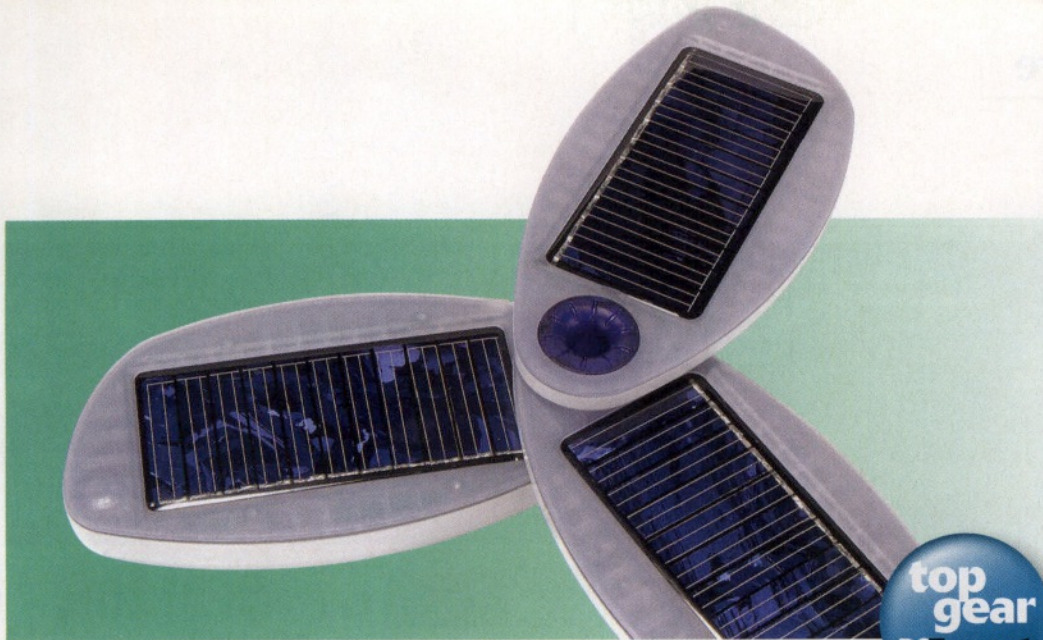


SmartScart

Price £35 Manufacturer Delta Blue Web www.bluedelta.co.uk

If you, like us, have a PC in your living room, you'll know that it's a pain in the bits. No, not because of the noise, the annoying lights on the front of the box or having to turn on your TV to play a song. Nope, it's wires that are the problem. Wires, wires everywhere. While the SmartScart is a great way to dispose of one lot of AV wiring, it'll also help you in another way, too. You can prioritise your most important kit, so you can record something from your Sky box while playing music from your Media Center. You also won't have to change SCART leads when watching a video or DVD. Rather clever, we're sure you'll agree.

82% PCF says... "Cheap, clever, simple and sturdy."



Solio Portable iPod Charger

Charge your iPod using the power of Horus himself

Price £50 Manufacturer Solio Web www.ipodworld.co.uk

Back in the 1980s, somebody on Tomorrow's World – probably that Janet woman – said that solar power would revolutionise the world. We'd all feed our electronics from panels on the roofs of our homes, right? Wrong. Anybody who installed solar panels found they produced less juice than an apple left in the desert for 24 hours. They were rubbish.

Apart from the fact it looks like you're carrying a pack of measuring spoons around with you, we actually rather like the Solio. It does the job, although you'll need to have a latter day iPod – third generation or later. Simply fold out the wings and watch the LED light come on as it charges.

Our iPod-worshipping buddies over at MacFormat don't like it. But what do they know? If you've got every other iPod accessory, you might as well get one of these, too. It takes several hours to charge on the go, but you can charge the Solio's internal battery in around 8-10 hours. That's enough for several hours more tuneage while stranded on a remote Scottish isle.



Ministry of Sound StikAx

Price £75 Manufacturer Ministry of Sound Web www.stikax.com

Using the included software, this trigger-style device enables you to mix sounds up by pressing the various buttons along its length and moving it around, hand-held mouse style. But, instead of being a useful tool, it's actually a novelty. OK, so it's designed to be fun, and the included software isn't bad, but it's useful for nothing more than adding the odd sound clip to the odd video. It's a toy, surely? And while it's bound to provide a few hours of fun, barely a week will pass before the kids move onto something else. It's too expensive for something that's not going to be around too long.



ZipLinq Road Warrior Kit

Price £50 Manufacturer ZipLinq Web www.ziplinq.co.uk

Someone must be buying these kits with springy retractable cords. They must be, otherwise companies like the snappily-named ZipLinq wouldn't keep releasing them. This kit includes everything you'll need if you take a laptop out onto the road. Hell, it even includes one of those USB lights to aid your after-hours typing in a dimly-lit motel. And, as well as the expected USB mouse, there's also a modem cable for those £1 a second 12k connections, plus Ethernet (fat chance) and a USB A male to female extension cable. Honestly, the excitement is all too much to take.

Output 4-12V
Weight 165g
Dimensions (shut) 120 x 65 x 34mm
Warranty One year

81% PCF says... "An interesting iPod accessory, but you'll need to find some sun."



Creative SoundBlaster Audigy 2 ZS Notebook

Price £99 Manufacturer Creative Web uk.europe.creative.com

Everybody knows that the sound pumped from your average laptop is about as listenable as Steps' difficult third album. Creative has come up with an answer that grants you the power of 24-bit sound in a notebook. With the huge number of so-called entertainment-based notebooks now on offer, a leg-up for the sound can't be sniffed at, especially when you can feed the signal into any Hi-Fi setup. It's not all about output either there's an optical in, too. As is usual for Creative the kit isn't cheap, but then there's nothing else like it.

Long term test

RATINGS BEYOND THE WARRANTY



Logitech Internet Navigator SE keyboard

PCF151 77%

Finding a good keyboard is like finding a soulmate. You spend hours a day together. You depend on one another. But the most important thing is that your special relationship lasts for years. Adam is strictly a Microsoft keyboard man. Over this side of the office though, the preference is usually Logitech. Microsoft's keyboards are usually noisier, thus inflict pain upon the ears of people in neighbouring booths. But Logitech's are stiffer, and although generally less springy to type with, the firmness is welcome when it's late into the working day. But here we have the holy grail. We reviewed the Internet Navigator in our input peripherals Supertest in early 2003. The keyboard has Logitech's zero degree-tilt technology, and as such it took a bit of getting used to. It quickly became and now remains a firm favourite. But now, Microsoft's keyboards are improving, while Logitech's have stagnated. As we have two PCs on our lucky Format desks, the keyboard is plugged into an KBM switch to move between both machines. It's not exactly compliant at this dual-use; the keyboard occasionally stops working and flashes its lights, almost apologetically. But we unplug it and connect it again and that seems to do the trick. Some of the extra controls are genuinely useful, too. The volume wheel is handy, but the small scroll wheel on the left is used more. Dan Grabham

64% PCF says... "Classic example of gadgets you don't need."

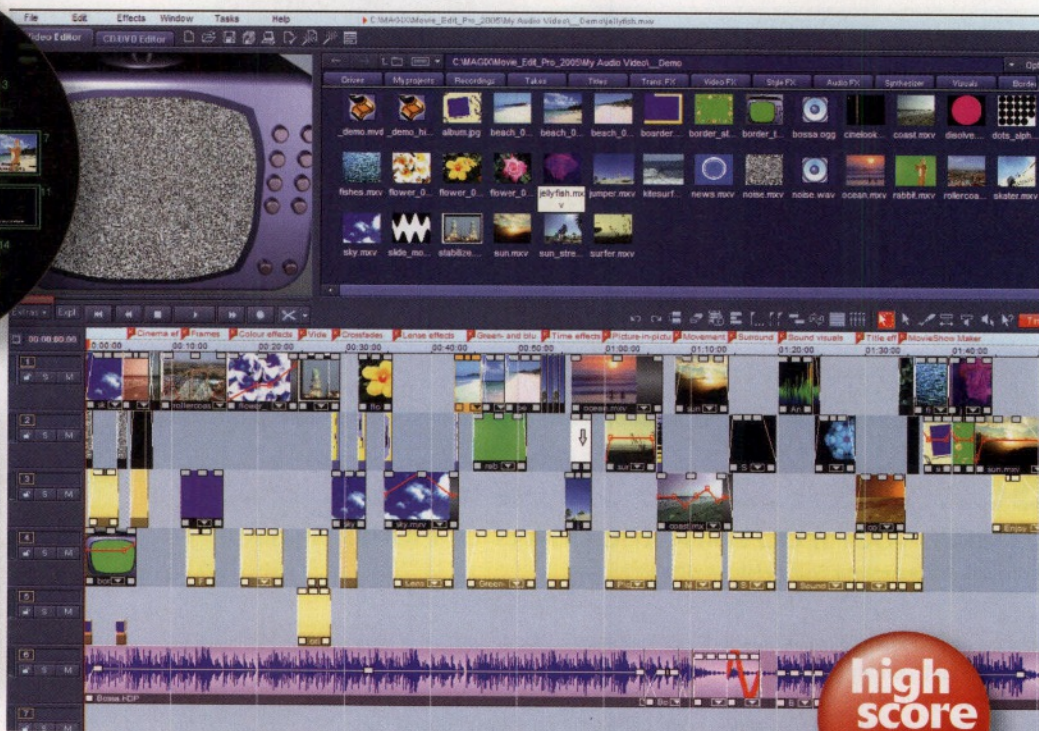
69% PCF says... "Nice try, but impractical or realistic."

84% PCF says... "Serious sounds for serious users."

Once you've finished your video, designing a menu is just a matter of choosing your favourite.



Storyboard mode proves a more accessible option, with video thumbnails and icons.



MOVIE CREATION SUITE

Magix Movie Edit Pro 2005

Dust down the clapperboard – Magix's Movie Edit Pro is ready for action with a new and improved 2005 sequel...

Price £50 Publisher Magix Web www.magix.com

Poor feature levels aren't a criticism you can make of any of Magix's software – how can the company justify giving us so many of them in one program?

Building on its predecessor's success, the 2005 edition of the *Movie Edit Pro* package has a whole array of additional effects and tools, but doesn't drown you in buttons. Listing them all would more than fill this page.

Comparing the feature set to that of a competitor such as Pinnacle's *Studio Plus Version 9*, the two software suites trade functions almost blow for blow, with both packages integrating support for surround sound, native widescreen and video effects, such as picture-in-picture. However, delving deeper into the Magix application, the *Movie Edit Pro* package also offers two more noteworthy additions, including the ability to import video from your DVB TV card for backing up your favourite shows, and the ability to transcode DV video directly to MPEG2, saving you time and – more importantly – valuable hard drive space.

As with any video-editing package, having a large amount of free hard drive space is of paramount importance,

YOU SHOULD ALSO CONSIDER...

- >> **Video Studio 8**
Ulead
- >> **Pinnacle Studio Plus v9**
Pinnacle
- >> **Roxio Easy DVD Copy**
Roxio

and with a typical install weighing in at just under 1GB, the application has quite a footprint.

MEDIA MANAGER

As part of the suite, Magix supplies *Movie Edit Pro*, its media manager software. Unfortunately, this attempts to take over your system by associating itself with almost every known media format. The aim behind this computer coup is to make your video sequences and images easier to catalogue, but the manager is bloated and ungainly, frequently offering poorer performance than the standard Windows applications it has squeezed out for simple viewing tasks.

"With a typical install weighing in at just under 1GB the app has quite a footprint"

For doing what it's designed to do, though, *MPE2005* is great. Each section of the application has brief video tutorials explaining the core aspects of the package. The simplified skin of *Movie Edit Pro* allows for either an uncomplicated storyboard or the more detailed timeline option. More advanced

users can indulge in a range of video effects or dabble with the eight channel audio mixing desk.

Curiously, the accompanying paper manual spends more time highlighting the advances from the 2004 edition than explaining these functions, which are left to the PDF version to expand on. You've got to hand it to Magix, though – the suite is vast. You can even create your own VCD or DVD menus with a variety of included templates. There's a number of features such as this that appeal to beginners, but *Movie Edit Pro* tries to be all things to all people.

While it may be vast, it's rarely authoritative – the most obvious limitation is that there's no provision for adding your own new designs beyond selecting background JPGs. Mind you, there's a decent Media CD option that lets you create professional slideshows of your favourite digital photos in just a few minutes.

Like the other offerings in the Magix range, *Movie Edit Pro 2005* is certainly cheerful, even if it's not exactly cheap, but its vast array of features may just

Needs 400MHz CPU, 64MB RAM, 1.3GB HD

Wants 2GHz CPU, 256MB RAM, 2GB HD

86% **PCF says...** "A reasonable budget package let down by unnecessary additions."

TRACE YOUR FAMILY TREE

RootsMagic v2 UK Platinum

Step back in time and go back to your roots to discover your genealogy

Price £50 Publisher S&N Genealogy Web www.rootsmagic.co.uk

Family history, sorry, genealogy, is the new cool – it really is. It's traditional, rather stuffy image, has disappeared because people, quite simply, want to find out more about their family background. *RootsMagic* is widely acknowledged to be one of the best packages to act as the bedrock for your family history research.

The Platinum version is the very top of the *RootsMagic* tree, but you can buy the basic edition of the program for just £21.95, or the Standard single CD edition for £34.95.

In terms of usability, *RootsMagic* is quite simplistic – at times resembling the kind of database you might download from a dodgy freeware site, but appearances can be deceptive.

POWERFUL PROGRAM

Indications of the program's power quickly become apparent as you start to use it. For example, *RootsMagic* doesn't assume a mother and father are married unless you specifically add what's called a 'marriage fact'. It will remind you of this obligation, and because the application is fairly complex, you might think it's intrusive. Quite the opposite is

true: *RootsMagic* is a friendly family history application.

The *Basic* version doesn't include any of the content that's included with the *Platinum* and *Standard* editions, merely the program itself. If you're serious about finding out more about the past, the extra content really is fascinating, covering six out of seven CDs. *RootsMagic* would be better offering its wares on DVD, but don't let this minor oversight put you off buying it.

The amount of information you get in the bigger editions is incredible. There's a name index with six million entries, as well as *Bartholemew's UK Atlas*, unbelievably from 1898. The *Platinum Edition* also includes every name change in the UK between 1760 and 1901 and the directory of landowners from 1873. It's this level of detail that sets the *Platinum Edition* apart, and makes it worth the extra money. **Dan Grabham**

Needs Windows 95, 32MB RAM, CD-ROM drive

Wants Windows XP, 256MB RAM, CD-ROM drive

81% PCF says... "There's no better genealogy package for the money."



MUSIC MAESTRO

Magix Music Studio 2005

Mix your own sounds and become a music producer with Magix Music Studio

Price £50 Publisher Magix Web www.magix.com

Magix has celebrated the tenth anniversary of *Music Studio* by squeezing in yet more features and including a whole CD of brand-new samples from beat combo Lo Fidelity Allstars.

In the decade that *Music Studio's* been on the market, music technology has changed almost beyond recognition. While keeping pace with that revolution, *Music Studio* is undoubtedly a 'home' package. It doesn't boast the same credentials as *Reason 2.5* or *Cubase*, but there are enough effects on offer to give even the tone deaf the opportunity to get their creative juices flowing. It also includes an excellent beginner's music sequencer.

BEAT THE SNOBS

Much of the layout of the new edition of *Music Studio Deluxe* remains unchanged from last year, as do the key features, such as the 96-track stereo recording and vintage amplifier emulation.

For the 2005 edition, however, Magix has opted for a back-to-basics approach, adding what it calls 'bread-and-butter' effects to the package. These are basic real-time effects normally found on guitar pedals, such as chorus,

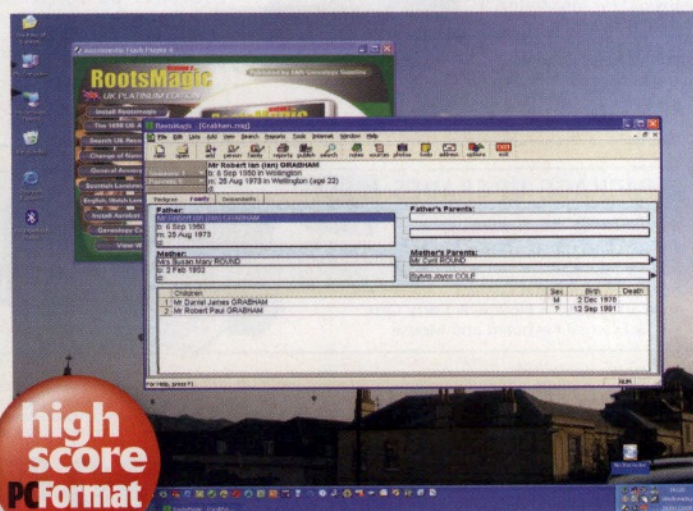
echo, filter, flanger and our personal favourite – distortion. The software has also been updated, so mixing can now be conducted in 24-bit sound – assuming the appropriate audio hardware is available. Also new to the *Music Studio* package is the Elastic Audio feature. It breaks down waveforms into component parts, enabling you to quickly shift the pitch of different elements, such as instruments or vocals.

One less welcome addition is the inclusion of a media manager. This annoying feature is becoming more commonplace in many packages. And they're generally destructive, prising your file associations apart and taking centre stage. It's one example of why the fresh lick of paint doesn't offer much advantage over the previous version of the software. Even so, it's still one of the better suites available for budding bedroom musicians. **John Skeoch**

Needs 500MHz CPU, 64MB RAM, 300MB HD, 16-bit soundcard

Wants 1GHz CPU, 128MB RAM, ASIO-capable soundcard

82% PCF says... "Caters for the avid enthusiast, not the professional."



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"LucasArts called in spec ops to advise on the game, and it shows"

If a Trandoshan gets too intimate, don't forget the close combat button...





Your men are easily identified by their different coloured shields. Just like in the real army, kids.

SQUAD-BASED FPS

high
score
PCFormat

Star Wars Republic Commando

The Episode III prequel still doesn't explain why the stormtroopers in Star Wars don't have Kiwi accents

Price £35 Publisher Activision Developer LucasArts Web www.lucasarts.com/games/swrepubliccommando

You are an evil, racist toady sent to crush hope and freedom under a steel jackboot. Because unless something unexpected happens in *Episode III*, the Jedi-assisting, galaxy-defending clone trooper you play as in *Republic Commando* is, as soon as cuddly old Senator Palpatine becomes Emperor and starts making with the finger-lightning, pretty much damned to become an Imperial Stormtrooper – oppressing galactic liberty, burning Jawas, locking badly-coiffured princesses in cages and mysteriously losing the ability to shoot straight. Perhaps all of our questions will be answered in the inevitable sequel, *Star Wars: Fascist Commando*.

Typically Lucasian plot inconsistencies aside, *Republic Commando* is unquestionably one of the better scrapings from the *Star Wars* prequels' rancid hide. That's largely because it doesn't much feel like a *Star Wars* game – more like a *Warhammer* 40,000 FPS that never was. Really, you're a Space Marine by another

name, all about the über-violence, dark science-fiction and macho military camaraderie. This isn't about destiny or doomed love or midichlorians or CGI Yodas performing unlikely gymnastics – this is about fighting in a man's army. LucasArts called in Spec Ops veterans to advise on the game, and it shows. *Republic Commando* is fond of cryptic communication with the rest of your squad via baffling hand-signals, precision strikes to clear rooms in seconds and that quintessential Hollywood moment where one guy has to hack into a computer or plant a bomb while his mates cover him against waves of

ON THE DVD

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- >> Playable demo



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Electronic Arts
- >> **Freedom Fighters**
Electronic Arts

The infinite droid

Endlessly respawning enemies? Yes please



Republic Commando's toughest opponents are **Droid Dispensers**. These generate infinite enemies until you destroy them. One of your squad needs to stand right next to it for anything up to a minute planting a bomb, while the others have to stop him being brutally eviscerated by droids.

approaching attackers, set to an appropriately epic musical score. Marvellously, you always get to choose whether you're the chap doing the hacking amidst a hail of gunfire or whether to send a buddy over to do it instead, while you man the rocket launcher. And unlike *Half-Life 2*'s lemming squadmates (let's be honest, *HL2*'s go-over-there button was entirely to get friendlies out of your way when a few minutes of bumping futilely against them still didn't make them budge from the doorway they were blocking), the friendly AI is quietly adept enough that, for the most part, you can trust your CPU-controlled team implicitly to do their job and not impede yours.

LILY-LIVERED

Progression through the game – covering three main areas, the planet Geonosis (as featured in the climax of *Attack of the Clones*), a derelict spaceship and the Wookiee world of Kashyyyk – is depressingly linear, but each pocket of combat offers a surprising variety of ways to approach it. This even includes complete cowardice, should you happen to be a whimpering, spineless cretin. Don't like the look of that spider droid? Well, get one of your three squaddies over to a ledge with his sniper rifle, another crouching behind a Wookiee corpse (no, really) lobbing grenades and the third suicidally running around bouncing ineffectual laser beams off it while you cower in the corner by the health machines. All this is done by a context-sensitive single button, not the bewildering array of function keys most squad-based shooters require you to press in the correct order if you want to



Don't worry if you can't shoot straight. Someone else will do it for you.

"There's a real sense that you're part of a military unit"

have your team do anything other than eyeball the enemy and wobble slightly. That your men can only be made to snipe, grenade or rocket-launch from pre-determined positions rankles a little – why that Wookiee carcass but not this one? – meaning that LucasArts to some degree dictates how a few encounters are handled, but what you yourself do is always your decision.

DEATH ROCKS

Where *Republic Commando* is grandest, however, is in death. As in *Medal of*



A small wiper cleans gore off your visor.



Aren't you a little short to be a member of a vast Clone army?



This, it will be no surprise to learn, hurts.

Honor: Pacific Assault, your being exploded into small pools of pulsating pink goo isn't necessarily game over, but unlike *Pacific Assault*, this is often down to strategy rather than chance. While writhing around holding in your cloned guts with a plastic-armoured hand, you have the option of calling over your men to revive you – but demanding someone leave their safe snipe position to get busy with the morphine (or Bacta, the *Star Wars*' equivalent) immediately places them in danger. Be reckless here, and another one bites the dust. So, you've got two men still standing and two down – you can't afford to lose someone else, but at the same time those two aren't going to last long on their own. It's all about timing at this point – you can tell the survivors to maintain current orders (ideally you managed to set a specific target before chowing down on thermal detonator) and then, when there's a brief lull in the gunfire or one of your men has been smart enough to lob a distracting flashbang, call one over to get you back on your feet. Just as another few Droidekas burst through the door, send your rescuer back to his rocket launcher spot, then dash over to that downed Commando from earlier. It's now your turn to crouch vulnerably on the floor amidst pitched battle and apply Bacta to the fallen before you're all overwhelmed.

Given that Luke Skywalker had to be dangled in a whole tank of it for several days just to heal a few Wampa scars, we're not entirely sure how Bacta performs instant healing, so we prefer to think of it some form of fine whiskey,

Army men

There's no I in team. But there are these guys...



1

Name Delta Four-Oh, also known as 'Fixer'

Hollywood stereotype

Technical genius

Hobbies Hacking, being unrelentingly humourless

Sounds like Buzz Lightyear

Quote "Could you can the chatter until you've got something useful to say?"



2

Name Delta Six-Two, also known as 'Scorch'

Hollywood stereotype

Lovable wisecracker

Hobbies Explosions, wildly inappropriate comments

Sounds like Buffy's Xander

Quote "Rule 45 – any crash that you can walk away from is definitely a good one."



3

Name Delta Oh-Seven, also known as 'Sev'

Hollywood stereotype

Kill-crazed, no nonsense hard nut in the Charles Bronson mould.

Hobbies Close combat, long-range combat, shooting at things – fighting in general, really.

Sounds like Pinhead (*Hellraiser*)

Quote "Hrrrrrrr."

UP CLOSE A CLONE'S VIEW

Man in the field

Your squad knows how to handle itself and, rather annoyingly, seems to have infinite ammunition and grenades. They won't pick up new weapons, though.

The Iron Giant

Gah – Superdroids. Don't expect to take down one of these on your own in a hurry without the aid of lots of heavy explosives.

Q: What's the last thing to go through a Geonosian's head when he hits a Commando visor? **A:** His backside.

Batter up

Get one of your men over to this handy piece of shelter, and he'll duly start lobbing grenades from it.

Good with your hands

Few battles can be won without some managerial intervention. You order your boys to focus on an enemy target, defend a specific area or regroup.

The flock

Your team's status is always visible from the HUD – their state of health and what they're currently up to can be deciphered from this display.

Halo, halo

Keep an eye on your shields – they recharge quickly, but you'll die fast without them. You can also choose from three flavours of grenade here.

slamming you conscious and granting complete obviousness to the fact that your lungs are dangling somewhere around your kneecaps. The crux here, though, is that the game doesn't force you to reload unless all four Commandos are down. Of course, you may tire of waiting for someone to come to your aid and reach for the quick load key anyway, and there are moments where the friendly AI chooses to stare at the walls rather than deal with the enemy, but the awareness that there's always a strong chance of rescue adds to the sense of being part of a crack military unit that can overcome all adversity. Except Force users, as the *Jedi Knight* series suggest, but conveniently you don't run into those.

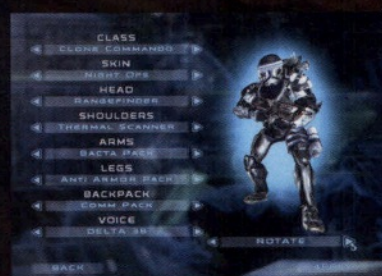
MINI-WOOKIEE

Unfortunately, this slew of good ideas is undermined by a sense of smallness to the game they've been dropped into. The single-player campaign is fairly short and on the easy side, winding up in an abrupt semi-Hoosier end that's essentially a big plug to go see *Episode III*, lending an uncomfortable realisation that the game might have accomplished more if it didn't have to be released within a few months of the movie. Like *Doom 3* and

Half-Life 2 before it, *Republic Commando* suffers from throwing the same handful of enemy types at you a few too many times, though, in fairness, foes – particularly the Superdroids – fought early on remain just as tough by the end of the game, giving a sense of consistent challenge rather than mere repetition. It's the locations that are the biggest let-down, though. The Wookiee world of Kashyyyk for instance, long-famed in *Star Wars* lore for being an awe-inspiring sight of villages built into a forest canopy, towering hundreds of feet above the mossy ground, is, save for an impressive bridge defence setpiece,

Solo multiplayer

Attack the clones online!



Multiplayer Republic Commando misses the point a little. The beauty of the single player campaign is the squad dynamic, but online you're just another lone sci-fi guy with a gun running around shooting people in the *Unreal* engine.

largely reduced to a series of small rooms with vaguely wooden walls alternately containing small groups of enemies and piles of ammunition and health machines. Despite *Republic Commando* being built in the *Unreal* engine, it's also been primarily designed for Xbox. The control system does almost convince you otherwise, but the often repetitive locations – and poorly-textured graphics – reveal the truth.

Fortunately, the action is so focused, the squad dynamic so intuitive and the banter so entertaining that you won't stop to consider the game's failings. Were we complete fools, we'd take all this as a sign of promise for *Episode III*. But then we remember the love scene in *Attack of the Clones*, and reaffirm our belief that, games are *Star Wars'* only hope for retaining any dignity. **Alec Meer**

Needs 1GHz CPU, 256MB RAM, 64MB 3D card

Wants 2GHz CPU, 512MB RAM, Direct 8 128MB 3D card

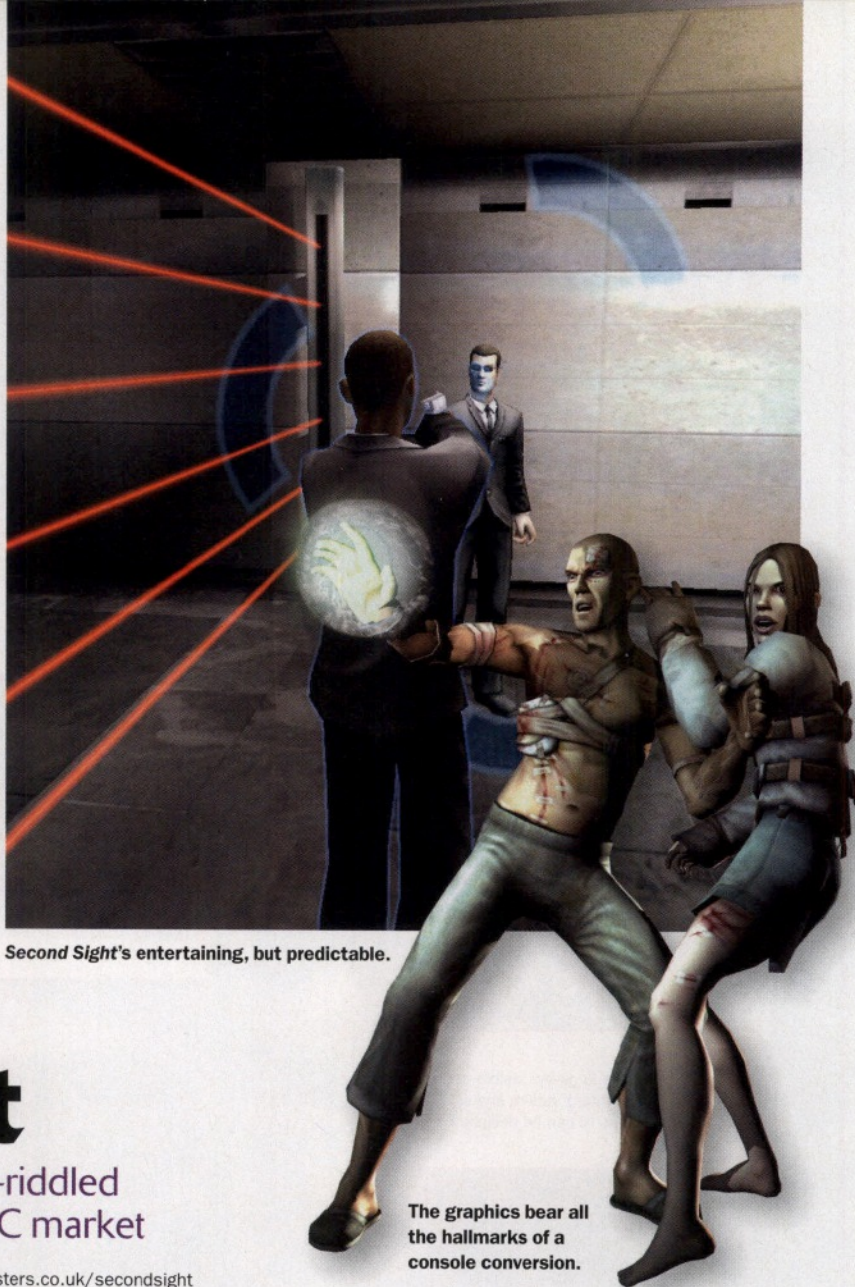
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81% **PCF says...** "The competition's not strong, but this is the best *Star Wars* prequel game yet."



For a psychic, our hero displays a worrying lack of foresight.



Second Sight's entertaining, but predictable.

CLACK-HANDED SCI-FI CONVERSION

Second Sight

Second hand, more like – another cliché-riddled console game comes staggering to the PC market

Price £35 Publisher Codemasters Developer Free Radical Web www.codemasters.co.uk/secondsight

Strange, how psychics are so bad at predicting their own future. If we had psychic powers, we'd be having a ball: levitating gaily down the street, gleefully emptying cash machines or earning a lucrative income on the horses. Yet in games, anybody with so much as a bent spoon ends up bald, bandaged and strapped to a table by a loon in a labcoat. Maybe Ladbrokes maintain a big net for the purpose.

Despite exactly that inauspicious opening, *Second Sight's* storyline is one of its highlights. A cheering piece of sub-

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>> In-game footage

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Hip Interactive
- >> **Freedom Fighters**
EA
- >> **Hitman: Contracts**
Eidos Interactive



X-Files hokum, it skips back and forth in time piecing together a dastardly tale of secret agents and sinister experiments, all the while drip-feeding psychic powers into your initially stealth-based skill set. Your hero becomes more proficient at killing, with highlights including levitating people off balconies. Unfortunately, proceedings return to comic book cliché with the realisation that with great power, comes great responsibility: specifically, to ensure you don't pop a nerve ending out of frustration at the deeply clunky camera and controls. Admittedly, the near-*Vice City* level of badness in the auto-aim does make you put more effort into stealth, but we can't help but feel it's not intentional.

Psychic powers don't escape unscathed, either. Telekinesis often becomes an exercise in grabbing somebody like Darth Vader and then smacking them wildly against the walls, which would look daft even if it didn't require frenziedly sawing the mouse back and forth like a cellist on amphetamines. It's then a case of seeing what fails first: your grip, their jugular or a clipping bug which will fling them into Debug Limbo. Even at full

capacity things do look pretty dreadful, and it's a credit to the animation and the storyline that the horrid carved-from-cheese graphics don't distract you.

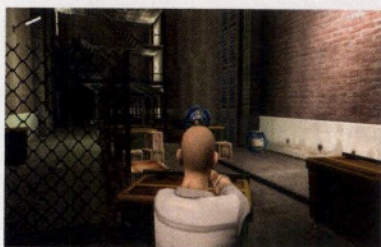
MYSTIC MUG

The reason the flaws aren't unbearable is the final strike against it: because the levels are so simple and the AI so dim, it's almost relaxingly easy. This trims the playing time down to a sparse eight hours or so, and it's all so painless that even the cretinous episodic auto-save doesn't receive the savaging it so richly deserves. It's a pretty dirty trick on the behalf of the developers, but it works: if you slapped a budget price tag on it, this would just about stand recommendation as a bit of soothing sci-fi nonsense. For full whack, though, we'd rather steer clear of it.

John Hicks

The Hitman and Him

Cheesewire versus astral projection: Fight!



Close, but no barcode.

The similarities between this and the *Hitman* series are many, but *Second Sight* holds a trump card by enabling you to peer round, rather than through doors – so you can hit people with your force powers while remaining inexplicably unseen. Now that is stealthy.

Needs 1GHz CPU, 256MB RAM, 16MB 3D

Wants 2GHz CPU, 512MB RAM, DX9 3D

Net Gaming None

Discuss www.pcformat.co.uk/mag/sec

66% **PF says...** "So nearly entertaining, but the controls are just too crummy."

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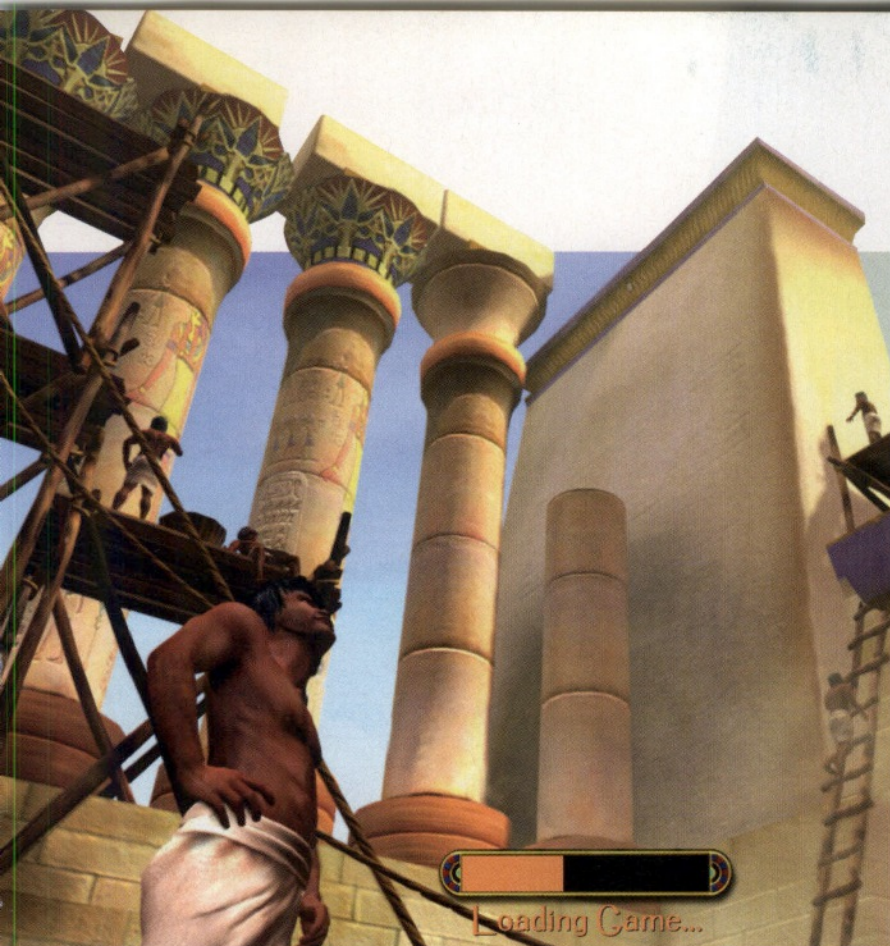
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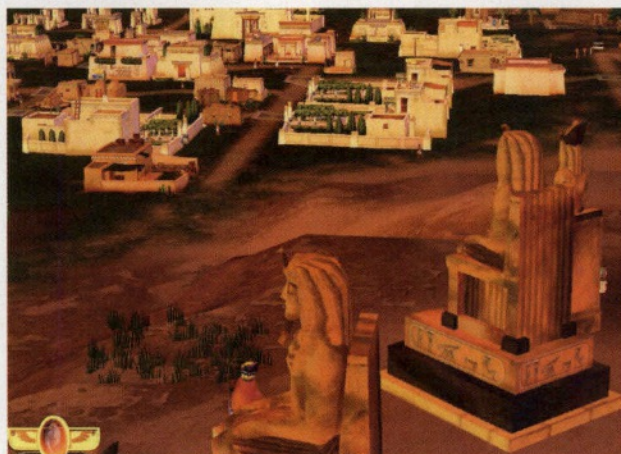
Multiple Input Multiple Output



Constructing vast edifices to one's own magnificence was very much an Egyptian hobby.



This pyramid looks like it could still be a work in progress.



The size of your population dictates what you can build in COTN.

MONUMENTAL SIMULATION

Immortal Cities Children of the Nile

Build a giant monument, and your son will build another, and his son a bigger one: it's what we call a pyramid scheme

Price 29.99 Publisher Sega Developer Tilted Mill Web www.immortalcities.com

When you think of Egypt, what do you imagine? Lots of sand, pyramids, camels, the enormous monuments and Cleopatra, right? Well, *Children Of The Nile* doesn't start like that.

In this game, you work your way through five ages of Egyptian history, building up your city from a collection of huts close to the Nile delta to the Egypt of Hollywood's golden era, all ridiculous statues and chain gangs dragging vast lumps of stone. Surprisingly, there's no sandbox mode, perhaps because the whole game is one.

LOAM MAINTENANCE

The Nile is both the livelihood of, and a perennial threat to, your settlement. Normally, it floods once a year. However, sometimes the floods are larger and your buildings on the river bank are swept away in the torrent; other times the flood fails completely, and your farmers (who plant the crops that provide grain – the core resource on which the whole game is based) have a

poor harvest. That's the first challenge of *COTN* and, providing you're reasonably prudent to start with, it's easy to satisfy.

Beyond construction there's not much to do; the combat is, understandably, pared down and most of the time you don't even need a city guard, let alone an army or navy. Everything else is almost automatic, which is our first issue with the game; there is so little to do, apart from pop to

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Boris Karloff/The Rock

Egyptian Expansion

Get to the top using diplomacy or violence



The city doesn't have all the resources it needs, so you'll need to use the Evil Genius-esque system of barter to procure what you need. You trade (or fight) with other cities for their resources. You must also defend yourself from the roving enemy tribes who attempt to steal your assets.



This is what the Egyptian Pharaohs would no doubt term 'a great starter home'.

the world map and back (see the boxout below) or canvas the opinion of your workers. We've gone away from the computer for a break, forgotten about it and come back to find three generations of our dynasty have passed and, beyond a decline in our reputation, the city is running itself.

Despite all of this, playing *Children of the Nile* is actually quite a rewarding experience. The challenge of maintaining your reputation in the face of a weak Nile, defending the city from attack and completing the scenarios is gratifying, but there's not really enough here to justify long-term play. **Dan Griliopoulos**

Needs 800MHz CPU, 128MB RAM, 32MB 3D card

Wants 2.4GHz CPU, 512MHz RAM, 64MB 3D card

Net gaming None

Discuss www.pcformat.co.uk/mag/cotn

74% **PCF** says... "Solidly built, it will stand for all time, though tourists may not linger."



"Okay I'll talk, anything but a 'tired'-based pun"

TORTUOUS SHOOTER

The Punisher

As much as we enjoy gunplay and violence, *The Punisher* turns out to be a little, well, punishing... and not in a good way

Price £20 Publisher THQ Developer Volition Web <http://thq.com/punisher>

Maybe the tabloids are onto something. Maybe videogames do influence behaviour after all. A few days with *The Punisher* have left us wanting to emulate the central character, Frank Castle, and go on a vigilante spree, not in New York City, but at the Volition head office. Visions of feeding the level designer's genitals into paper shredders, slamming heads under the photocopier and posting fistfuls of the Xeroxed brains to the management with a note that reads We still can't see what you were thinking. It wasn't like

ON THE DVD

>> Screenshot Gallery



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Rockstar
- >> **Max Payne**
Rockstar
- >> **Bloodrayne**
Majesco

this before. We started off liking the game. But as it turns out, *The Punisher* has a way of wearing you down.

So it's a third-person *Max Payne* wannabe that would violently kill for half of that game's noirish grittiness. Action consists of wading through criminal populations comparable in numbers to the workforce of China, cutting down men with the calm, rhythmic air of a man harvesting corn in the fields. There's an undeniable appeal to this. Forcing human shield henchmen to absorb their peers' fire while you cock a pump-action one-handed is definitely cool, but not cool enough. After three levels the action becomes painfully old, especially as Frank can't really do anything else during normal action.

IT'S GOOD TO TALK

This is where the game's interrogation gimmick comes in – to distract you from the underlying weakness of the rest of it. *The Punisher* character exists to make bad men (and now games journalists) suffer. To this end you can grill henchmen for info before you use them as armour. Interrogation methods such as choking, punching and slamming the



That's horrible. Those tiles are sooo 1973.



Wood you like chips with that?



The lesser known Marvel hero Giant Stuffed Bear Man comes to Frank's aid.

Points mean prizes

The Punisher's hideout is full of goodies



Between missions you go back to your hideout where you can look over your weapons and read newspaper clippings highlighting your recent exploits. You also get to spend points here. Earning sufficient points in a level will get you Bronze, Silver and Gold medals, which in turn unlock level challenges.

hoodlum's face into the floor. And by keeping the subject's tension level just right you can break his will and get him to reveal the info you're after. There's some skill involved in the procedure, which amounts to delicate strafing of the mouse, making you struggle to harm the subject enough to scare him into talking without killing him. But again, it's a novelty. Extra-violent 'special areas for interrogation' offer some variety with imaginative forklift truck and chemical bath tortures, but the overall feeling you're left with is one of prescription.

It's that kind of dictation that really begins to grind you down. You'll sigh and play ball, but only because you have to in order to find out where the next boss is hiding. Gratuitous ultra-violence may be what it's all about but is that really what you want?

James Carey

Needs 1.2GHz CPU, 256MB RAM, DirectX 8.1 3D

Wants 2GHz CPU, 512MB RAM

Net Gaming None

Discuss www.pcformat.co.uk/mag/punisher

40% PCF says... "Quickly repetitive action, with ultra-violence that soon becomes mundane."

Never turn your back on the enemy
— unless the man behind you is a Marine



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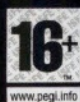
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TERRIFYINGLY DETAILED RACING SIM

GTR

Another entry for those who need not only speed, but hugely comprehensive suspension settings

Price £35 Publisher Atari Developer SimBin Web www.gtr-game.com



ON THE DVD

>> Playable demo



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- >> Richard Burns Rally
SCI
- >> Grand Prix Legends
Sold Out

We always used to like corners. True, Pythagoras never really hit it off with us, and there were a few dark moments with the L-shaped Tetris block, but there were so many good times: peeking round them in *Thief*, taking shots from them in *Pro Evo*, and of course throwing cars round them in *TOCA Race Driver*. Now, we can't even think of them without grinding away another few millimetres of tooth enamel. It's all GTR's fault. They may resemble the wiggly bits found in other

driving games, and you might be tempted to approach them as such: slow down a touch, turn the wheel in the appropriate direction, maybe sideswipe the competition if you're feeling a bit flash. Trouble is, GTR isn't like other driving games, and anything so slapdash will send you ploughing straight into a vast gravel trap. To tame the GTR corner, you need to get a perfect line, be in just the right gear, and balance the revs oh-so gently – oh, and if it's the first corner then you really ought to think about how warm your tyres are.

And that's without considering that the road may be coated with rubber from previous laps.

This, you may have gathered, is a hard game; it makes little attempt to disguise its contempt for the uninitiated. Skip the top 'Simulation' difficulty level, skirt 'Semi-Pro' and drop into the tawdry confines of 'Arcade', and you find that the bottom difficulty setting is 'Sunday Driver'. Despite such a derisory label, it's actually the first step in an otherwise

tortuous difficulty curve, forcing you to grasp the basics of picking a good line and hitting the right speed. Subsequent difficulty settings up the number of opponents and the accuracy of the driving experience until you start developing your skills. It's a harsh, trial-and-error process, but it's straightforward enough to make you persevere, and actually getting all the way round a tough course can make you euphoric.

All the while, you can appreciate the remarkable level of finish that's gone in

to nearly everything. The view from your (adjustable) car seat is pleasingly accurate, with the fine detail of both cars and tracks

being beyond reproach: the finish on everything from the dashboard to the asphalt is spot-on. The AI isn't quite so convincing but it does its best, with just enough noticeable slip-ups to convince, and the sound is fantastic: the gutsy roar of the engines is matched only by the authentically incomprehensible static-



You get a complete range of in-cab views, and you'll need them to monitor cornering.



Look ma, no hands! We kill ourselves, we really do... or will if we carry on like this.



AI isn't the best we've seen, but it's solid and unforgiving on high difficulty settings.

There goes the FIA

It's like Jay Kay's garage, with stickers on



We'd thought that EA and Codemasters had picked the garage bare of motor-racing licenses, but FIA GT has eluded them. A full complement of cars is available: 56 from the likes of Ferrari, Porsche, Lister and Morgan. There's also ten tracks, and every last scratch has been painstakingly etched on.

"To tame the GTR corner, you need to get a perfect line..."



A few turns with damage disabled will be required before you can face a real race.

blurred gabble coming from the pit crew over the radio.

There's no shortage of engines to choose from, either: on lesser difficulty settings you can pick from the entire garage of 56 vehicles, so you don't have to slog through the championship to get your desired set of wheels. Naturally, there's a huge array of adjustable options, and it's made slightly more welcoming thanks to the dizzying array of car-tweaking features being presented as separate profiles. Being able to load, save and download them is one of several routes into a comprehensive online back-end – a welcome hangover from *GTR*'s original status as an enthusiast mod – that's tailor-made for distributing content and finding opponents for the comprehensive online multiplayer.

Unfortunately the attention to detail isn't as comprehensive as we'd like. The grip on realism falls down when you pull in to find that your pit crew consists of a bobbing, brightly-coloured arrow and a crew of well-tamed poltergeists, who rock your car around a bit while magically restoring tyre and fuel levels. The backgrounds are weirdly sparse, too – although there's the requisite 2D spectators, strategically placed cameramen and ever-present helicopter overhead, the courses seem flat and lifeless. More significantly, the weather and damage effects are weak – the changes to handling are spot-on, but the visual cues are confusing. The rain

effects in particular are remarkably poor: unless you opt for third-person viewpoint, you get an epilepsy-inducing flashing effect that's exacerbated by the constantly-shaking in-cab view.

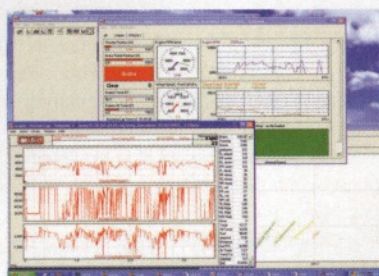
And then there's the way the difficulty curve gets exponentially harder after Sunday Driver, but there's no alternative but to start at the bottom and slog your way up, with some horribly jarring leaps between different difficulty settings. You can, mercifully, toggle the various realism options in simulation mode, but it's still none too

accommodating. A ghost car for practice trials, or mapping the extremely helpful track commentary on to the race itself, would have soothed things enormously. There is the ever-present cop-out of AI control – tap a few buttons and you can relinquish steering duties for a break – but it's not great either as co-driver or

"A monstrous physics engine that'll stir a petrol-head's soul"

Speeding Demon

Number crunching can improve your race



GTR's telemetry data is nothing short of terrifying. A separate desktop application stores your stats in every race, and you can take a leisurely trip back to Windows to peruse a the info. You'll need more than a little engineering knowledge to translate it, but it's incredibly helpful.



There's a distinct lack of trackside scenery in *GTR*.



The damage engine makes great claims of realism, but it's unimpressive.

tutor, and only really of use if you're mad enough to enter Le Mans.

It adds up to a slightly confused combination of intimidating depth and unnerving shallowness: on the one hand, a monstrous physics engine that'll stir a petrol-head's soul, on the other some patchy graphics and a slightly home-made techno soundtrack that calls up wholly unflattering comparisons to EA. However, it does push the realism harder than the more entertaining *Live For Speed*, and makes a reasonable grab at the glitz of *TOCA Race Driver 2*, making *GTR* an accomplished, if not perfectly engaging sim.

Jon Hicks

Needs 1.2GHz CPU, 384MB RAM
32MB 3D card

Wants 2GHz CPU, 512MB RAM
128MB 3D card

Net Gaming LAN/Internet, up to 24 players

Discuss www.pcf format.co.uk/mag/gtr

82%

PCF says... "The slightly clumsy finish tarnishes an otherwise excellent sim."

DE-LUMINATED

Dark Fall 2 Lights Out

Ghostly adventure tale tries to steady itself on a crumbling cliff

Price £20 Publisher Adventure Company Developer XXV Productions Web www.xxvproductions.co.uk/darkfall2

There was a strong temptation to approach this review from as literal a point of view as the developer here – but rather than leave you utterly in the dark, we will tell you a bit about the game.

Set in 1912, you are Ben Parker, a cartographer (echoes of *Monkey Island 2's* Wally here), sent to the South Devon

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coast to map some rocks. As if to quench your thirst for excitement, something mysterious envelops the local lighthouse, and you must sort it out – if you have the patience to get there. Using a horribly tired *Myst*-like movement method, you must navigate through a billion static screens to arrive at your desired destination.

Getting there, the lighthouse is dark (notice that word again), empty and lifeless. The crew have disappeared, and there are fishermen at risk of

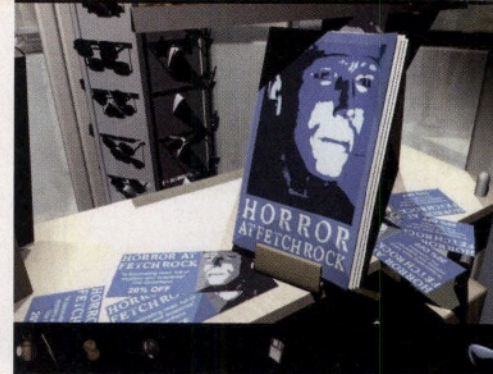
crashing into the rocks on the coast. With no direction, you are charged with getting the lighthouse working and finding out what happened to the crew... But it doesn't end there. *Dark Fall 2*

has a clever plot twist in which you become the central character of the story of that fateful night, and when teleported through time to the present

"Unfortunately, the static screen movement system is dire"



Looks like a photo. Oops, that's because it practically is, since everything's so static.



Just in case you get bored, take a break and have a read. You may learn something.

day, you find the history of that night needs to be re-written.

THE TRUTH IS OUT THERE

If you're an *X-Files* devotee, you might appreciate the conspiracy theory as you attempt to piece together the events of the night in question by jumping into the past, present and future until you discover the truth. While the plot and visuals are, admittedly, quite impressive, the static screen movement system is just too dated and likewise vital items are hidden in shadows, without so much as a clue to their whereabouts. We assume the enjoyment is hidden in a similar place.

Craig McBeth

Needs 350MHz CPU, 32MB RAM, 3D card

Wants 500MHz CPU, 64MB RAM, 3D card

Net Gaming None

58% **PCF says...** "Intriguing plot and visuals, but we've had enough of these lazy adventures."

COMPREHENSIVE STRATEGY

Hearts of Iron II

Time to find out how good at warmongering you really are...

Price £30 Publisher Koch Media Developer Paradox Entertainment Web www.paradoxplaza.com/heartsofiron2.asp

Manually loading every plane. Dropping each bomb. Cutting sandwiches for the Victory Day celebration. These are three things you don't have to do in *Hearts of Iron 2*, and at times, it feels as if they're the only parts of world-wide warfare that you're not in charge of. This game is Hardcore,

BUY THIS IF YOU LIKE...

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Activision
- >> **Rise of Nations**
Microsoft
- >> **Europa Universalis II**
Focus

with a capital H-Bomb. Hardcore to the extent that even hardcore grognards will need a few quiet nights with the manual before heading out to invade Poland.

THEIR FINEST HOURS

The original game promised much, but largely failed to deliver – an unimpressive release only partially salvaged by a fan-made community patch. Its sequel, aiming for the same target of real-time *Risk*, works straight out of the box.

As an example of how in-depth the strategy gets, attacking a province isn't simply a case of pointing to it. Instead, you have to consider everything from the time of day you attack to when backup forces should turn up on the horizon. As for research, forget assigning a team to work at random – here you have specific historical figures, such as Messerschmitt, to lead each side's lab-coats, each with their own specialities.

'Easy to play' and 'Paradox Entertainment' really are the oil and

high
score
PCFormat



There's nothing too exciting on offer weapons-wise, but it does the job.

water of the English language, but luckily, *Hearts of Iron 2* has seen plenty of major interface improvements that make the challenge one of wrapping your head around an entire world war, rather than fighting with your mouse cursor. As a complete world war in a box, it's frankly unparalleled. It lacks the sheer visceral thrill of *Rome: Total War*, but offers its strategy in far more depth than anyone who's spent the lion's share of last year hailing Caesar.

Richard Cobbett

Needs 300MHz CPU, 64MB RAM, 16MB 3D card

Wants 450MHz CPU, 128MB RAM

Net Gaming 32 players

87% **PCF says...** "More small print than the EU constitution and much more rewarding."



The invasion of Britain: here's your chance to rewrite history.

GET IN - GET IT - GET OUT

STOLEN

CRIME NEVER FELT SO GOOD

"Stolen manages to combine all the best bits from Prince of Persia, Splinter Cell, Metal Gear Solid and Tomb Raider." **XBOXGAMER**

"The game looks great, and Stolen is an example of how developers are just now able to exploit the full graphical power of the PS2." **IGN.COM**

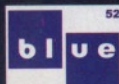
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PlayStation 2





Send peasants to repair burning buildings, no point getting your own hands dirty.

REAL TIME STRATEGY

The Settlers Heritage of Kings

The fifth *Settlers* game tries some heroics to save the series: can it succeed, or will it succumb to the Black Knight of tedium?

Price £30 Publisher Ubisoft Developer BlueByte Web www.thesettlers.com

We're not in Kansas anymore. The *Settlers* have been stripped of their rotund cuteness and forced into a world where they are presided over by Dario, a dashing young prince. Changes are afoot, and these are frightening times for devoted followers of *The Settlers* series.

But the whirlwind that has blasted its way across the *Settlers* landscape is not one that dumps us in a magical

ON THE DVD

- >> Screenshot Gallery
- >> Demo
- >> In-game footage

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Microsoft
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Vivendi
- >> *Sim City 4*
Electronic Arts

kingdom. Instead we seem to have crash-landed in a sleepy suburb of gaming. It's somewhere that seems familiar and also rather lethargic. This is where games come to retire. *Settlers* is now a touch more serious, all medieval combat and quests of revenge, but it can't shrug off its charming economy building past, nor seize some dynamic new mantle.

WE CAN REBUILD IT

Despite similarities to the *Age of Empires* games or *Warcraft III*, devotees of those RTS disciplines will laugh at this game's weak offerings, kicking them aside in a shower of poor AI and unsophisticated tactics. Despite the sweetness of the animations and the little animals flitting about in the leafy glades, there's not much here to hold our interest. Once the building blocks of your civilisation start flowing in you can sit back, idly maintaining a mob of swordsmen to fend off minions of the Black Knight. There is no desperation to the arms race and no supposition that



The wealthy Settler family extended their property with a swimming pool.



Four windmills and you get a flying castle! If only that were true...



Things learned from games: hit buildings enough and they burst into flames.

Look At The Stars

Hope these aren't faulty towers.



The most delightful aspect of *HoK* is making sure that your city is highly efficient so that you can quickly upgrade the major buildings, like the college upgraded to a university. Sadly it's not the functionality that excites us but the lovingly crafted little animations that accompany them.

one more building upgrade will unlock something new and invigorating in the game's uninspired tech-tree.

Combat is woolly and confused, offering only the narrowest of tactical options. Building more men than the base next-door is still the best option available, and even though you're taught to place, construct and upgrade varied defences, they're little more than stone-clad ornaments on the mantelpiece of your disinterest.

And yet despite all this you sit there, mesmerised, in a limbo between boredom and contentment. Click, click, click. It's not awful, just empty. How long can it hold you in that limbo state? Not long enough.

Jim Rossignol

Needs 1.4GHz CPU, 265MB RAM, 32 MB 3D

Wants 2GHz CPU, 512MB RAM, 64MB 3D

Net Gaming LAN, Internet, 8 players

Discuss www.pcf format.co.uk/mag/set5

60% PCF says... "Don't play this game if you're aged over 70 – you've got better things to do."

GET REAL



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- > Based on real-life FIA GT team telemetry data
- > Live Track Technology: course conditions change as the race progresses

www.gtr-game.com

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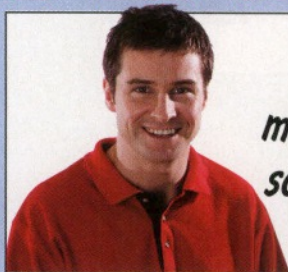
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FOOTBALL V9.1

UEFA Champions League

FIFA dons a fake moustache and funny glasses, but it's fooling nobody

Price £40 Publisher EA Sports Web www.uefachampionsleague.ea.com

We often criticise EA Sports for churning out the same old games every year without much in the way of innovation; take your pick of the 2005 versions of *Madden*, *Tiger Woods* and *NHL* for the latest evidence. We can't make that point about *UEFA Champions League*, but only because



Sliding tackles can be vicious and they also take time to get up from.

FIFA 2005 was released only four months ago. In all but name, this is another *FIFA* game.

EA has attempted to justify its latest money-spinner by trying a slightly different formula. Doing away with *FIFA*'s limited career mode, it has introduced a new mission-based system. Each week, you're given a set of objectives by the Abramovich-esque club owner. Generally, these relate to your match; you may have to win by two clear goals, or score with a specific player. Occasionally, though, you're given an off-the-field challenge, such as replacing a striker in the transfer market.

This amounts to a flashy show of flair. There is, however, some distressing foul play. Firstly, the series of events is pretty much identical every time you play the season, so it all becomes very repetitive. More importantly, it simply doesn't feel like football. In the real sport, the entire season builds up to ultimate success or failure in May.

ON THE DVD

>> Playable demo

BUY THIS IF YOU LIKE...

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EA Sports
- >> **Pro Evolution Soccer**
Konami
- >> **Total Club Manager**
EA Sports



Two inches to the left and it would have been a corker. The goal drought continues.

Reducing this to a set of short-term goals is unsatisfactory to say the least.

The actual gameplay is simply *FIFA 2005* re-incarnated. If you want a detailed description, you can read our review of that game; suffice here to say that it's a darn sight better than *FIFA 2004*, but still isn't fit to lace *Pro Evolution*'s boots. Once again, the presentation is superb. The usual top-notch graphics and spot-on statistics are backed here by the atmosphere-inducing EA Talk Radio – fans of *Madden* will recognise the idea. But is this enough to validate a second release within twelve months? We think not. **Russell James**

Needs 700MHz CPU, 128MB RAM

Wants 256MB RAM, 64MB 3D card

Net Gaming Multi-player career and tournaments, 2-player match-ups

64% PCF says... "One novel idea does not a new game maketh."

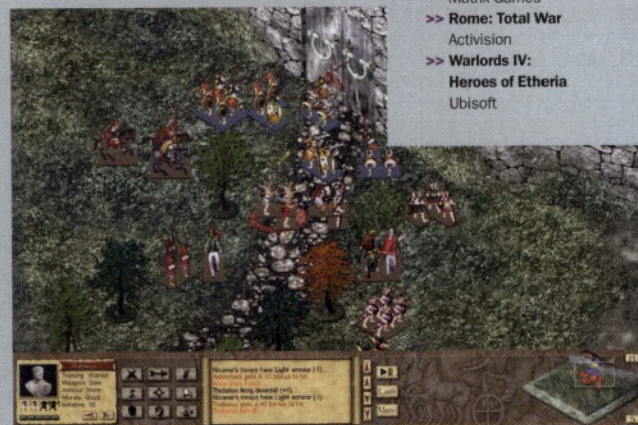
EPIC HEROIC STRATEGY

Tin Soldiers Alexander The Great

Commander, leader, conquerer. Step in to Alexander's boots

Price Boxed Copy: £20 Download: £15 Publisher Matrix Games Web www.matrixgames.com

So you've watched the patchy, sprawling epic that is *Alexander* and now fancy having a go at replicating the great commander's exploits for yourself, if so then this equally slow turn-based strategy game



Each battle tasks you with capturing certain preset locations.

ON THE DVD

>> Screenshot
Gallery

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Matrix Games
- >> **Rome: Total War**
Activision
- >> **Warlords IV:**
Heroes of Etheria
Ubisoft



could go some way towards satiating your lust for conquest.

Tin Soldiers replicates the type of turn-based, tabletop war-gaming preferred by attic-bound middle-aged loners, with each unit rendered as a static strategic piece on a tactical map. But don't let that put you off.

You begin each battle by first choosing then deploying your troops, after which you and your opponent issue orders simultaneously during the Command phase of each turn. Two mid-turn Reaction/Reserve phases then allow you to tweak your tactics in response to one another's movements. It's a simple yet hugely effective mechanic that places a real emphasis on genuine tactical awareness.

Tin Soldiers is deceptively complex, requiring you to master many different arts of war such as flanking, combined arms and manoeuvring if you're to stand



Keep your eyes shut lads, we don't want to end up like King Harold.

any chance at all against the smart and strategically adept AI.

Sadly though, *Tin Soldiers* is claustrophobically restricted by some uninspired level design, and all too often your soldiers are boxed in by clumsy dead ends, making more complex troop manoeuvres virtually impossible.

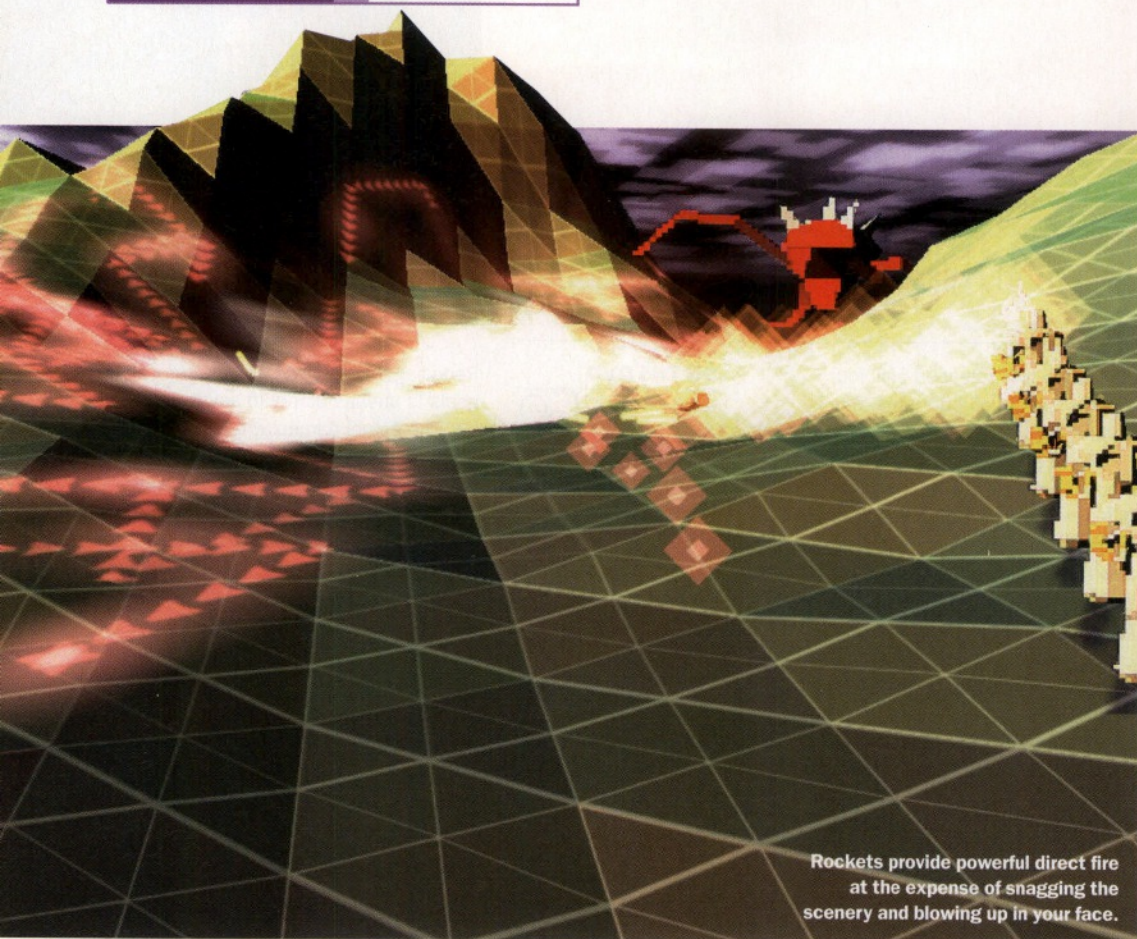
Just like its celluloid counterpart, *Tin Soldiers* has its merits, but is betrayed by a lack of polish. **Martin Korda**

Needs 550MHz CPU, 128MB RAM, 64MB 3D card

Wants 800MHz CPU, 256MB RAM, 128MB 3D card

Net Gaming Network IP connection only

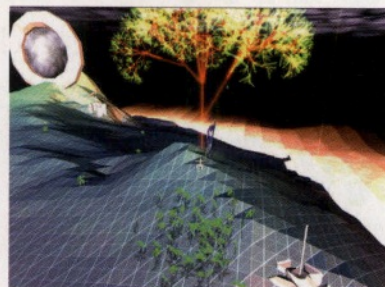
69% PCF says... "Almost great but most definitely ugly."



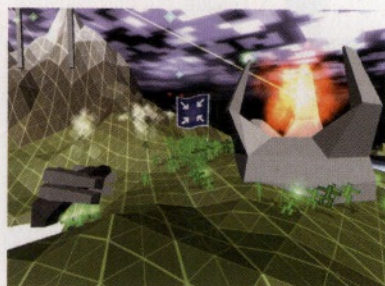
Rockets provide powerful direct fire at the expense of snagging the scenery and blowing up in your face.



The air-strike from ground zero.



Guide your Darwinians beneath the shade of a tree in this Lemmings-esque mission.



The chap with the flag is an officer, with a right-click alternating between his orders.

VIDEOGAME

Darwinia

Imagine if Norton AntiVirus was recreated as an action/puzzle/RTS game, and you were tracking down the viruses – fun, huh?

Price £30 Publisher Introversion Developer Introversion Web www.darwinia.co.uk

ON THE DVD

>> Additional screenshots



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EA



This game proves the 'genre' box is just a testament to most developers' lack of imagination.

What kind of game is it? It starts feeling like an action game. Then it seems to be a simple – but not simplistic – RTS. Then you realise it's constructed like a puzzle game... but that doesn't pin it down any more than reducing the thoughts you're having right now to mere pulses of electricity across your brain. What to put in the genre box? There's only one real, honest answer: 'videogame'.

Cut to its barest essentials, it's the men from *Cannon Fodder* versus the virus from, well, *Virus*. That is, you control your small group of soldiers via the mouse. However, rather than a real-world setting, it takes place in a retro-fantasia *Tron*-styled world, with the opposition the 'virii' that has infected the system. You defeat the enemy by shooting them. From this simple riff, it starts to improvise wildly and exhilaratingly.

You have three units (or, thanks to the context, 'programs') that you can swap between. As well as your squads, you can make engineers who are capable of capturing enemy installations and

gathering the softly pulsing souls of the fallen. You can process them, in the right building, into the natural inhabitants of the world: Darwinians. By transforming one of their members into an officer, you can guide them around the level. Manoeuvring them to the correct position, without being killed by the virus,

"That's the core of Darwinia: Cannon Fodder versus Virus, with little splashes of Lemmings and RTS"

is often an objective that recalls the pre-GTA DMA classic *Lemmings*. That's the core of it: *Cannon Fodder* versus *Virus*, with splashes of *Lemmings* and RTS. That describes *Darwinia* – maybe it even explains it. But it doesn't even chart a fraction of why it's so compelling.

Of all its magic, the most powerful is how it's based on an enclosed system, which you start to comprehend and master. The various strains of virus all act according to their own logic and need. Yes, your engineers can harvest the souls of the fallen... but so can

certain enemies. For example, the leaping spiders and sinisterly floating spore-generators can lay eggs that, when fertilized with a soul, hatch into new creatures. If left alone, they'd happily repopulate the landscape. Similarly, the trifids sporadically lob a pulsating spore across the landscape which hatches and spews more spiders, and so on. At first, this is terrifying. Turn your attention from an area, and you'll often return to find the infection taken over again.

FINDING A STRATEGY

You feel as if you're fighting an ecosystem that's trying to hang on to its existence, and it's a formidable task. However, as you observe, you start to

notice that there is a logic to how the 'virus' conducts itself, and realise how you can take things apart so they stay broken. You start doing things like sending suicide raids into highly-infected terrain just to take out the trifids, so cutting their regeneration mechanisms off at the source. You start realising that the spore generators only descend into range of your weapons when they lay an egg... so you leave souls, to attract them. And by the time you reach the end of the game, spiders change from laser-invulnerable monsters, who can

Choose from three units

Select the unit you want and get those Darwinians moving...



1

The Squad is your standard unit, which you'll use for most of the game, due to its relatively huge firepower. Eventually you'll be able to switch between three secondary weapons – lobbed grenades, direct fire rockets and Air Strike.



2

The Engineer unit handles the work-a-day tasks. It's important to remember it's more manoeuvrable than the standard squad, as it can traverse cliffs and water, allowing you much more obtuse approaches than straight on charges.



3

Armour only comes into play towards the end. Tanks can transport Darwinians around the map in speed and comfort, and transform into permanent gun positions for Darwinians to man. It's extremely useful when it turns into all out war.

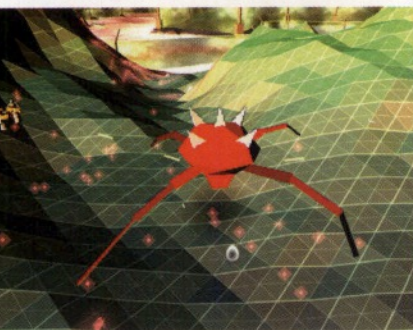
wipe out entire squads to something whose actions you understand and can skilfully counter.

All this rests on the AI, with every character acting in a distinctive way. The standard virii, who mill across the map in shoals, with your proximity luring them into attacking, are the simplest. The centipedes circle like sharks preparing to strike, trying to rush your soldiers, but being turned back by a laser wound. Best of all are the soldier ants, some of the most impressive AI we've ever seen, seemingly built to mimic the defence/forage activities of their real-life compatriots. Taking out an ant nest – which sends swarms to attack while swiftly gathering the souls of the fallen to transport back to their nest for processing into more ants – is unlike anything I've experienced in a game, ever.

It's often a terrifyingly challenging game, without ever having a classic fail-state. It never tells you 'game over'. If any of your units die, you can create another one with no limitation other than

the max-unit limit. And like any part of the simulation, you begin to play to this, and start using your units as resources to be destroyed and created as and when your tactics demand.

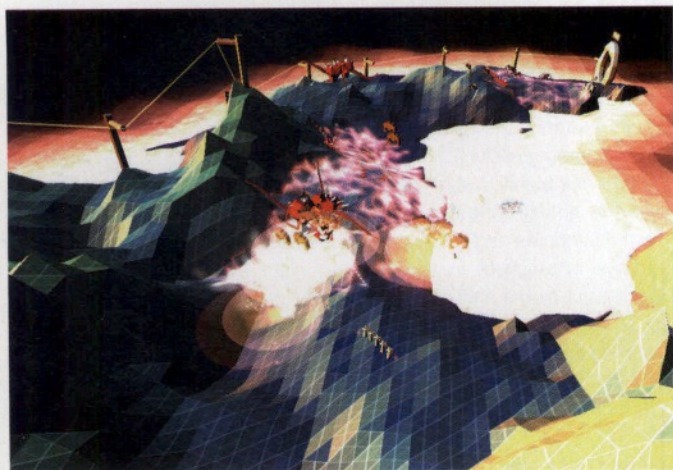
But why is it so great? Put it like this: I pulled myself out of bed this morning, with an idea of something that could work, and had to boot it up to see if I was right. What was the last game that asked you to think, learn and try to understand? What was the last game that asked you to solve a problem by understanding the rules and extrapolating from them, rather than just finding the right key for the right lock? It's a game that asks you questions. The joy is in finding answers. To use that most over-used of phrases, this is a genuine classic.



A spore generator, generating spores.

"To use a cliché, this game is a genuine classic"

Kieron Gillen



This is what happens inside your PC if you open an iffy attachment.

Needs 600MHz CPU, 128MB RAM, 16MB 3D card

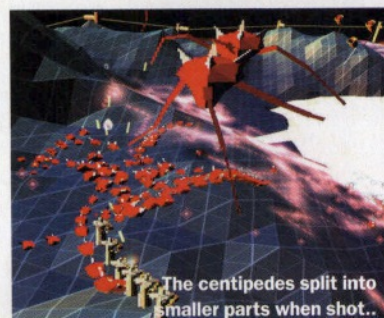
Wants 2GHz CPU, 256 MB RAM, DX8 graphics card

Net gaming None

Discuss www.pcformat.co.uk/mag/darw

90%

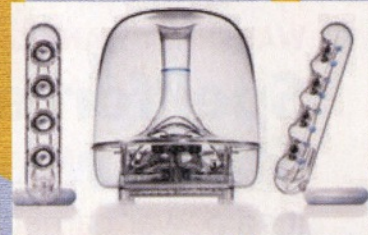
PCF says... "A new classic – it will challenge every gaming instinct you have..."



The centipedes split into smaller parts when shot..

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WARCRAFT WANNABE

Spellforce Shadow of the Phoenix

It's a power gamer's dream come true

Price: £20 Publisher JoWood Developer Phenomic Web <http://spellforce.jowood.com>

Good morning ladies and gentlemen, we again welcome you to the land of Generic Fantasy and hope you enjoy your travels through this pleasant if somewhat twee realm. *Spellforce* is sponsoring today's trip and would like you all to know that,



Welcome to the field of the cheesecloth of the golden duck of expansions.

ON THE DVD

>> Screenshot gallery



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Microsoft
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for a fee of £20, you may upgrade your experience to *Phoenix Class*.

We'd like to make it clear that this expanded package offers customers a much more powerful experience, as it contains two dozen new beasties of the most deadly varieties, as well as beefing up many of those you will be familiar with from *Spellforce* of old. At this point, we would like to draw your attention away from the somewhat paradoxically named 'Level 24 small spider'.

I PUT A SPELL ON YOU

However, we would also like to remind you all that this makes for a rather more intense and prolonged affair and though the *Phoenix* package does promise over 40 hours of gameplay, much of that will be spent engaged in high-level battles of attrition with unforgiving and numerous opponents. Those of you who have not previously enjoyed the delights (buxom



Make the most of skirmishes. You'll be involved in some massive mêlée later.

and otherwise) of *Spellforce* are not exempt from the *Phoenix* package, but will be diving in at the deep end should you invest in this offer.

Before you lay your money down, it is important to note that you are mostly paying for More Of The Same and we cannot accept responsibility for customer dissatisfaction with persistently poor voice acting, a cripplingly clichéd plot or the bumpy and buggy ride. Nevertheless, this is a third helping of a somewhat acquired taste and, as such, is almost as risk-free as it is idea-free.

Paul Dean

Needs 1.0GHz CPU, 256MB RAM

Wants 1.8GHz CPU, 512MB RAM

Net gaming LAN, Net Teamplay, Head 2 Head

59% **PCF says...** "More stuff to satisfy your *Spellforce* cravings, but rarely inspiring."

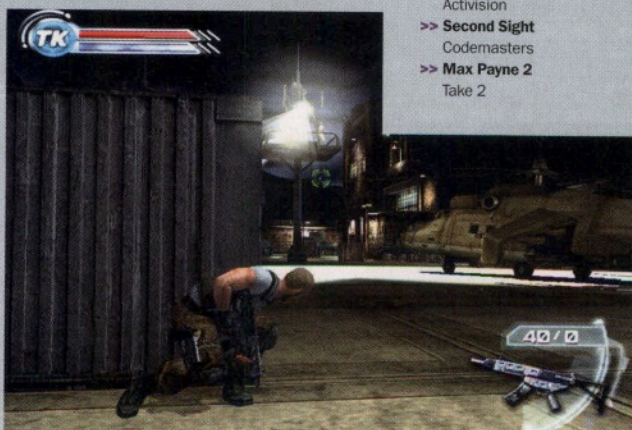
PSYCHIC SHOOTER

Psi-Ops The Mindgate Conspiracy

When spoon-benders turn bad

Price £20 Developer Midway Publisher ZOO Web www.psiopsgame.com

The addition of psychic powers to the standard FPS arsenal is what elevates *Psi-Ops* from a clichéd third-person shooter into an exciting if all-too-brief one. You can fill the enemy full of lead, of course, but it is only when



You can use your Remote Viewing skills to see what's up ahead.

ON THE DVD

>> Screenshot gallery



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Activision
- >> **Second Sight**
Codemasters
- >> **Max Payne 2**
Take 2

your innate ability to hurl bodies and furniture is revealed that the game becomes of any true interest.

If *Psi-Ops* seems like some near-future re-enactment of *Jedi Knight* – minus the fluorescent sticks – then be assured that while the means to evade or engage the enemy are very similar, the gameplay is much more naturally satisfying. The story, featuring the usual off-the-shelf amnesiac protagonist, eases you into using your abilities which increase in power through use. To begin with, you'll be battering bodies against the wall in the manner of psychotic fruit-wielding pre-schooler, but by the end you'll be juggling human torches and popping skulls with detached regularity. And enjoying it.

PSI-CLOPS

It helps that the pace of the game ensures a steady stream of enemies,



Cast includes a foxy young sidekick and an army of goons lead by a despotic general.

and that the controls are arranged to facilitate minimum confusion and the quick dispatch of a foe. There is a sluggishness in the movement system common to console ports and the game structure leans rather heavily on its arcade linearity, an over reliance on end-of-level bosses and the lack of any multiplayer functionality. That aside, *Psi-Ops* is an enjoyable diversion for a weekend or two.

Richie Shoemaker

Needs 1GHz CPU, 128MB RAM

Wants 2.4GHz CPU, 512MB RAM

Net gaming None

72% **PCF says...** "Hardly an essential purchase, but it sure is enjoyable while it lasts."

FINGERS AT THE READY

Are You All That?

Less hip than Granny's new prosthetic

Price £15 Publisher Digital Leisure Web www.areyouallthat.com

Wow. We're impressed. Never before has any trivia quiz captured so neatly the raw emotional rush of a wire wool enema.

AYAT is both a crappy gameshow and non-stop pain parade in one desperately unfunky package. The questions are bland, boring and totally lacking in humour. The graphics are a psychedelic mess of swirling,

repetitive clip art that you'd expect of colour blind otters who've just learned how to use a mouse. As for the quizmaster, suffice it to say that the only game we want to see him leading up is a fixed game of Russian Roulette.

Instead of wasting your time on this dross, head to eBay and hunt down a copy of *You Don't Know Jack*. It's also a party quiz game, but funny, varied,

entertaining and everything else AYAT should be but isn't. Better yet, it usually goes for about a fiver.



Just... no. Alright?

Needs DVD player

Wants Your immortal tortured soul

Net Gaming None

12% PCF says... "The most trivial pursuit since Trivial Pursuit."

COCKROACH CALAMITY

Bad Mojo Redux

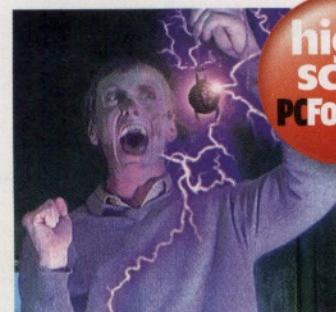
Prepare the spew bag, this is pretty rank

Price TBC Publisher Got Game Entertainment Web www.badmojo redux.com

A re-mastered re-release of an obscure 90s adventure game about a cockroach? Now we've seen everything. Most recently, dead rats, spilled liquor, giant spiders and the grubbier rooms since the cleaners kicked us out of our old offices.

Bad Mojo is certainly an unusual game, played out in the body of squishable, squashable little roach whose only weapon is

its entirely unimpressive shoving ability. Some cobblers about curses and Kafka-esque transformations are on hand to explain what's going on – but it's the bonus DVD, complete with interviews and footage from the genuinely twisted minds of its creators that really explains what's going on. Not many designers can claim to have raced against time to pose dead-rats before rigor-mortis set in, nor decapitate catfish in the name of their art. A strong stomach is more important than a Pentium IV for this one.



Gloriously taste free.

high score
PCFormat

Needs 800MHz CPU, 64MB RAM

Wants That'll do fine

Net Gaming None

81% PCF says... "Creepy, kooky and definitely very spooky."

Also out GAMING ROUND-UP



NRA Varmint Hunter

Price TBC Publisher Speedco
Web www.speedcoshooting.com

Is it wrong to see a picture of the little squirrely target-to-be on the title screen and go "Awww, so cute"? Is it missing the point to laugh at a hunter who packs a sniper rifle to take on groundhogs at point blank range?

Well, if you think so, you might get some fun out of *Varmint Hunter*, sitting still in the hope of headshotting a gopher – but we're finishing our *CounterStrike* game and heading down to the local petting zoo.

Needs 1GHz, 384MB RAM

Wants Better graphics programmers

Net Gaming Patch needed

21% PCF says... "All the thrill of the hunt, without the thrill or hunt."



The Corporate Machine

Price £15 Publisher Stardock
Web <http://totalgaming.stardock.com>

While certainly more approachable than its US election themed follow-up *Political Machine*, TCM is a much older game and really doesn't have the same smoothness or fun value. It's a real-time strategy game more than an out-and-out sim, challenging you to take over the world with cola rather than cannon fodder, and certainly an interesting idea – but these days, *Political Machine* is a much more fun to play, even if you don't care about Dubya.

Needs 75MHz CPU, 32MB RAM

Wants Anything over or above

Net gaming LAN, online at stardock

64% PCF says... "A unique sim but that's about it."



5 Days A Stranger Special Edition

Price from \$5 Publisher Ben "Yahtzee" Croshaw Web www.fullyramblomatic.com

And another adventure re-release. This one's rather more modern – even if it doesn't look it. One of the better amateur adventures around, this story of a random gathering of people trapped in a haunted house is available for free, with this SE version available to donors. In addition to the game, you get a short comedy interview and a running director's commentary candidly telling you more about the background and the making of the game. Excellent.

Needs 100MHz, 64MB RAM

Wants Anything over or above

Net gaming None

70% PCF says... "Not the best game but certainly good fun."



Transport Giant Down Under

Price £30 Publisher JoWood
Web www.transportgiant.com

Apparently, you'll be fascinated by crocodile and ostrich farms. No, really. It says so in the advert. You'll also get to play with the famous road trains. And, if you're still playing *Transport Giant* after so many years, you'll thrill to the excitement and adventure of building intricate train networks in Australia. Sadly, for the rest of us, there's nothing to get excited about – raw excitement matched only by *Trainz: Passenger Edition*. Yes, it really exists.

Needs 500MHz CPU, 64MB RAM

Wants 800MHz CPU, 256MB RAM

Net gaming None

45% PCF says... "More choo-choos, but no reason to choose it."

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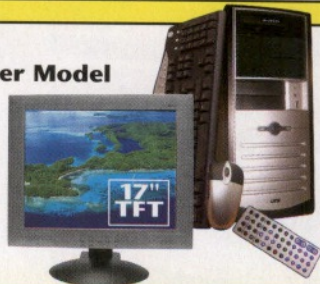
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ON THE DISC

Please note that not all the programs mentioned in Workshops are on the CD edition of PCFormat. The full list of contents is on p8.

THIS MONTH

122 >> UPGRADE
Overclock your CPU

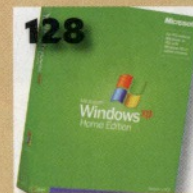
With hardware becoming redundant at record speeds, you might be forgiven for trying to eek out any extra life or speed from your ageing machine. This tutorial gives you some pointers.

124 >> GAMES
DIY the Half-Life way

Completed *Half-Life 2* already and can't find anything to fill the void? Then step this way as we show you the final stages of creating your own characters, levels and objects for use with *Steam*'s engine.

118 >> AUDIO
Mix with Music Maker

Serious about making music but don't know where or how to start? Pick up your coverdisc, open the tutorial and take a look at *Music Maker Silver*, your full program to mixing sounds, music and effects.

128 >> WINDOWS XP
Secret functions of XP

There are loads of useful tools hidden away in Windows XP that you don't know about. Follow part one of our guide to unlock its best-kept secrets, and you'll soon be getting the very best from your operating system.

PLUS

126 >> OFFICE

A useful program enabling you to create, edit and print PDFs without having to pay for Adobe apps.

130 >> NETWORK

Take a look at the corporate antivirus of choice. The award winning *eTrust Antivirus* is here, and on your disc for 90 days.

132 >> GRAPHICS

We've reached the final part of our *Bryce 4* tutorial. This month we take a good look at animation.

134 >> CODING

Closing this tutorial on *Direct X9* is a walkthrough on adding shadows, lighting and depth to your 3D images.

136 >> WEB

Worried about people stealing your personal info

and looking at your browsing history? Scared of revealing too much? Use *Complete Internet Cleanup Pro* to hide your online tracks.

138 >> LINUX

Get to grips with the Linux command line – it's not as tough as you think.

140 >> GENERAL

Use *Acronis True Image* to take a snapshot of your hard drive before it has a haemorrhage.

Dean Selby negotiates his cables in search of a wireless answer

When it comes to music wires have become a dirty item we're all keen to hide. Wireless is the thing, from the live systems for guitars and microphones to the modern-day wireless computer networks and peripherals. Cabling is passé, as retro and exclusive as paisley shoes and bowler hats.

Multi-speaker surround systems cause particular annoyance – wires everywhere. It was bad enough finding space for the speakers on our **Gigaworks S750 system**, plus there's the danger of tripping over wires when bringing in nachos during movie nights.

QUICK-FIX SOLUTION

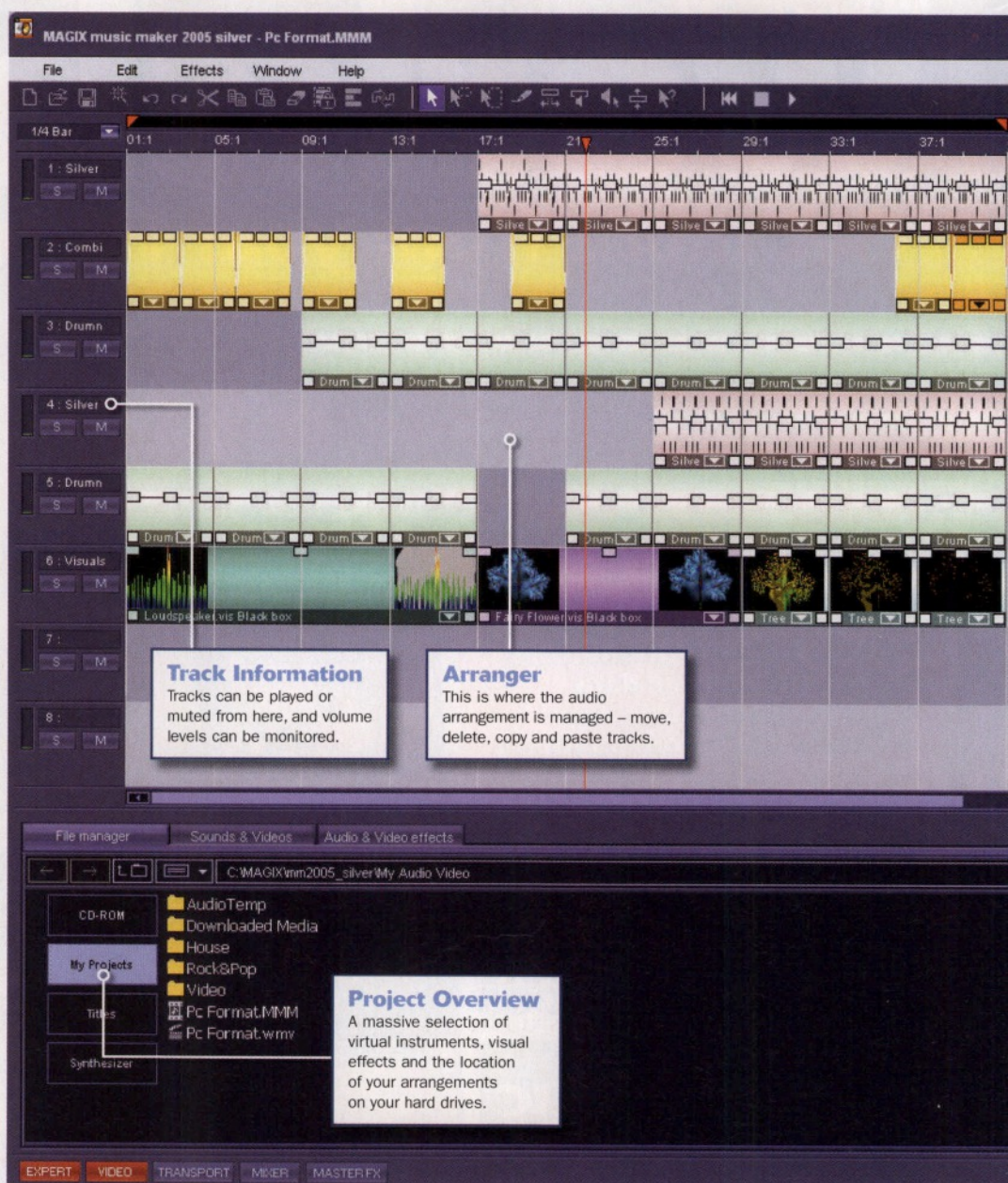
Wireless speaker technology has been aimed at the audio market as a quick-fix solution, allowing multiple speakers around the house without drilling holes everywhere. Solutions like Acoustic Research's small **AW-871** satellite system are trickling out, but may seem regressive compared to all but the most basic wired solutions.

Fortunately, **BridgeCo** (www.bridgeco.net) has been developing wireless systems using **Bluetooth technology**. Although this is still in the early stages of development, BridgeCo claims wireless 5.1 decoders are now a possibility. With Intel's support, we could start to see completely wireless surround systems in the next couple of years.

The hope is that once wireless systems become more available, gamers will find multi-speaker systems more attractive. Fears this may increase **Spinal Tap** radio interference during sessions of **Half-Life 2** are yet to be addressed.

Don't trip up on the Gigaworks S750's extensive cables.

Have your say <http://forum.pcformat.co.uk>



Making music with Magix

part 12

Dean Selby manipulates multimedia with Magix Music Maker 2005 Silver

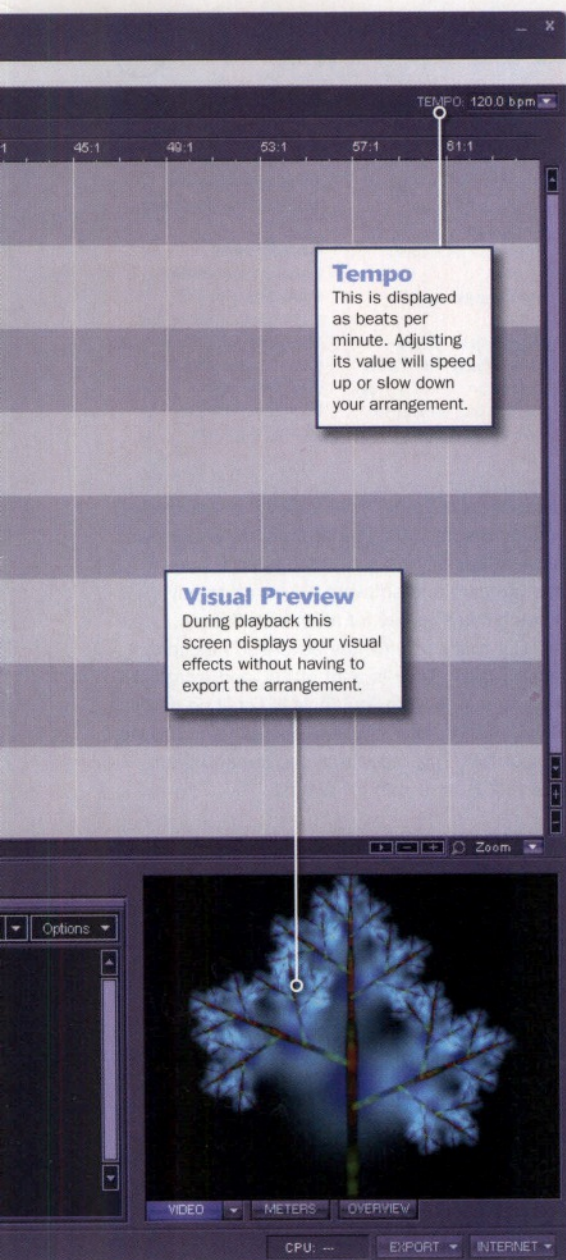
The classical composer Benjamin Britten once claimed that it is cruel, you know, that music should be so beautiful: He'd clearly never laid eyes on some sampling software we could mention.

Functional, yes, clever, yes, beautiful? well... two outta three ain't bad. Still, you wont want to

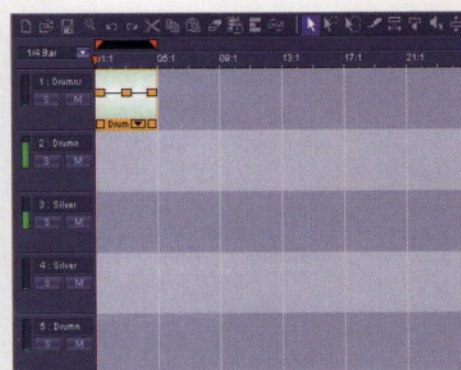
install *Magix Music Maker 2005 Silver* from our coverdisc just to sit and admire it, though. Oh no, you'll want to gaze beyond its simple, intuitive layout and get completely comprehensive to fall in love with its extraordinary functionality and the user-friendliness of its looping applications, reminiscent of Sonic Foundry's infamous *ACiD*,

Setting down your tracks

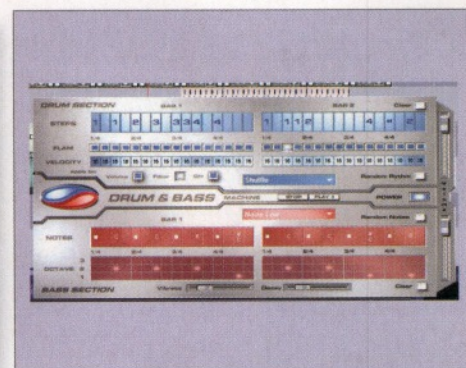
Select a synth and choose your vocals



1 Music Maker Silver provides you with two virtual synthesizers – the Drum and Bass instrument and the Silver Synth. Click on the instrument icon you want and drag it onto the Arranger. This will create a part for the track you've dragged onto it.



3 Now you have your first instrumental part, which you can copy and paste onto a separate track or onto the same one. You can also solo and mute the sounds from this screen, which is useful when you want to adjust sound effects and EQ.



2 Once you've dragged the instrument and created a part, the instrument window will appear. To create rhythms and bass lines with the Drum and Bass instrument, simply click the Steps and Notes respectively. You can also select from a range of presets and sounds.



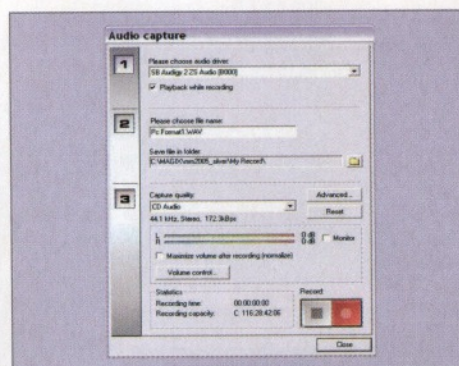
4 The second instrument is the Silver Synth. You handle this in the same way as the Drum and Bass, adding notes via mouse clicks on the Step Sequencer. Adjust the sound via the Controls, and the effects through the Distortion and Delay dials.

with the ability to customise audio-responsive visual effects – think a more colourful version of Windows Media Player's blurathons – titles and embedded movies.

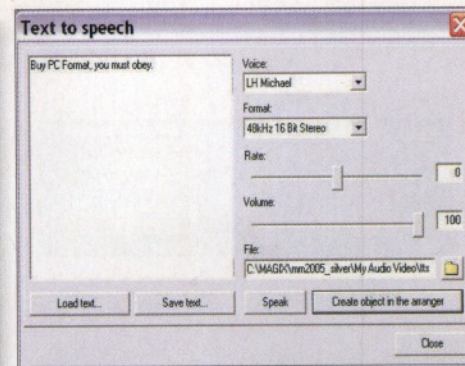
The title is also slightly misleading – *Music Maker* does so much more than it says on the tin. It also includes a handy video editing suite for correcting visuals for mixes. There are several audio functions, such as virtual instruments, effects and pseudo surround-sound technology. The Deluxe edition includes even more features and effects.

DIG DEEP IN YOUR POCKET

For those who wish for more high-quality production, full-screen rendering can be created – perfect for flashy home videos or amateur film making. Extensive dabbling in this may mysteriously coincide with a decreasing wage packet and an increasing number of boxes containing video cameras and related



5 You can also record your own audio alongside the virtual instruments. This is located via the **File→Record Audio** menu item. Once you've set the input, named your file and decided on the recording quality, *Music Maker* will create a separate audio track on the Arranger.



6 A frivolous but fun feature of *Music Maker* is the Text to Speech function. Fancy some lead vocals by Metal Mickey for your musical masterpiece? Simply type in the text, click the **Create object...** button and a digital vocal track will be added.

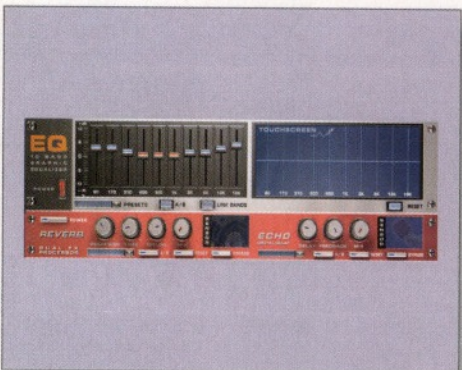
Turn the page for the rest of the tutorial...

Mixing it all up

Arrange, mix and manipulate your music...



1 You should now have at least two tracks in the Arranger – remember that you can add the same instrument playing different parts on multiple tracks. It's time to organise the structure of your tune; simply looping a part is unsuitable for creating MP3 files.



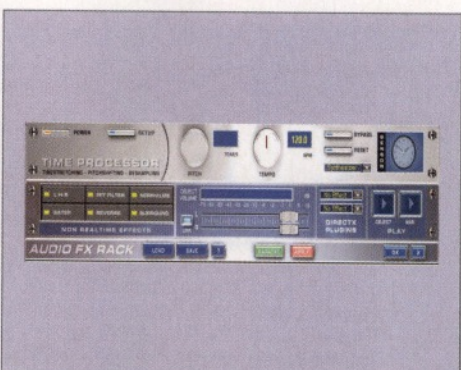
3 Most of the effects can be manipulated in real time while the music is being played. These effects can either be applied to a track as a whole, or by selecting a particular part of a track. We recommend experimentation and, possibly, dating a Japanese experimental artist.



5 Although *Music Maker's* output is in stereo, you can use the 3D sound effect to simulate room size and speaker positioning on a selected track or part. Like many of the effects, this can be recorded in real time, and played back the same way every time.



2 The mixing desk gives an overview of all your audio tracks. You can control individual volume levels, pan from speaker to speaker and add effects to each sound. Just be careful with volume levels when you're mastering your work to an MP3 file.



4 The time-stretching function allows for the tempo or pitch to be altered while the other remains constant. For example, you can slow down your drums to half-speed retaining the pitch. DirectX plug-ins can also be used, so search the web for freebies and crazy sounds.



6 You've multi-tracked the instruments, added audio and digital voices, and arranged, mixed and altered the tracks. To finish, you can create a wave, MP3 or Windows Media Audio export file of your finished music. Now you're ready to share it with the world. Go on, then.

ON THE DISC



Magix Music Maker 2005 Silver

Top audio and visual effect editing program for MP3, WAV and Windows Media file creation that's easy to use.

www.magix.com

Digilogue Blue-Line Plug-In-Pack

Shareware DirectX Plug-ins that can be used in both *Music Maker*

and *SoundForge*.
www.digilogue.de/english/blueline2.exe

CoolPlayer

Listen to your audio creations with this open-source media player, including free plug-ins and MP3 to WAV conversion.

<http://coolplayer.sourceforge.net>

paraphernalia. You'll have to buy the *Deluxe* version before you can start importing your own movies though, and you'll also need a video capture card and software. We're off to buy scratch cards to pay for all this stuff, then...

But that's only for the advanced functions.

Music Maker Silver is a lot of fun, and extremely easy to use. Before you know it, you'll be partying like it's 1990, informing anyone prepared to listen to your MP3 mix tapes that you created them yourself. From scratch... almost.

MAKING MUSIC

Here we take you through the steps involved in creating copyright-free music, creating tracks using the built-in virtual instruments, recording audio and digital speech, arranging and mixing your sounds, utilising the real-time digital effects and speaker simulation and then mastering your retro or darkcore anthem to a WAV or MP3 file.

Next month we'll show you how to add visual effects and title sequences to the music you've created. *Music Maker* comes with a wide variety of visual effects and includes an excellent visual preview screen integrated in the main interface, enabling instant video playback while you edit and arrange your music. **PCF**

Upgrade

Enjoy making music with *Music Maker 2005 silver*? Why not upgrade to the *Deluxe* version for £10 less than the asking price? hit the Buy Now button when you shut down *Music Maker Silver* to a secure online shop.
www.magix.com

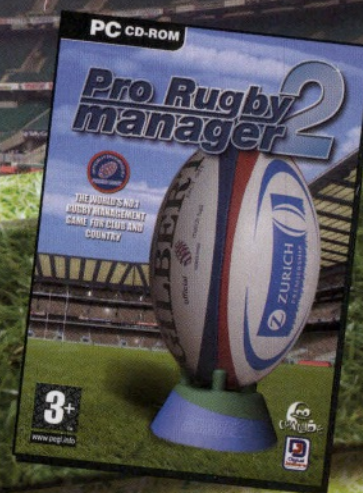
NEXT MONTH
YOUR AUDIO MASTERPIECE IS COMPLETE, BUT SAVE YOUR ARRANGEMENT. NEXT ISSUE WE'LL SHOW YOU ON HOW TO ADD VISUALS, EFFECTS AND MIXES.

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BEAT THE SCRUM! AVAILABLE AT



Getting more from your overclocking doesn't mean you have to freeze your fingers off

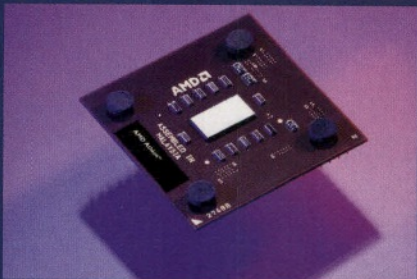
Being bitten by the overclocking bug is one thing, but if at some stage you find yourself pouring liquid nitrogen over a processor we'd suggest you question your motivations. But that's the lengths

some people will go to in getting the ultimate overclock and pop themselves at the top of the charts taking lowly 3GHz P4 processors to over 6GHz. Using anything

that can freeze your hand off is frankly nuts unless you happen to be a cryogenic research lab assistant and keep a bottle of liquid nitrogen in your bedroom.

FROST BITTEN

There are simpler and safer options – the best is to keep an eye out for more freely overclockable processors. Sometimes, for manufacturing reasons, Intel and AMD occasionally put out batches of unlocked processors that are begging to be overclocked. The classic was the old Celeron 300A slot 1 processor, which in many ways gave overclocking its original mass appeal. More recently the Athlon 64 FX range has been left unlocked, if you can afford one. Still available from certain overclocking stores the far cheaper Athlon XP 2500+ Mobile processor is also clock unlocked. Occasionally batches of P4 processors also appear that are clearly made with a far faster processor than their rating suggests. It doesn't happen often, but when it does tech forums are the first places to hear of it.



The Athlon XP 2500 Mobile is still available unlocked from the right places

Have your say <http://forum.pcformat.co.uk>

Overclocking your PC

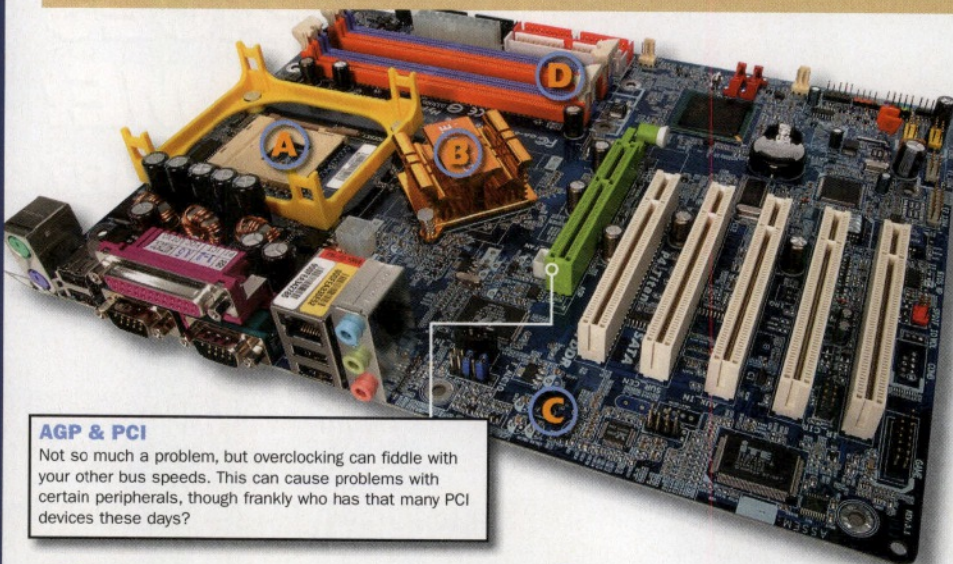
part
123

Another tutorial on overclocking?

Well, yes, but before you turn the page this one is different. So, you've tried overclocking your Front Side Bus by now and, yeah, it works a little, but you gave up because it wasn't stable or just didn't yield epic results. Over the next three issues we're going to take a look at getting more from your overlocks, with processors, memory and graphics card all pushed to extremes. Overclocking hasn't changed

much in recent years, so we're going to assume you know the basics and understand that you can really damage your hardware if you're not careful. With all new processors now firmly clock-locked the only way to force extra oomph from them is by ramping up the speed of the FSB. Doing so puts pressure on the CPU, chipset and memory as they're forced to run faster. All motherboards offer the controls we need – adjustments to the FSB, voltage levels of the CPU core and memory. **PCF**

UP CLOSE BUSES OF FIRE



AGP & PCI

Not so much a problem, but overclocking can fiddle with your other bus speeds. This can cause problems with certain peripherals, though frankly who has that many PCI devices these days?

A PROCESSOR Running your processor faster than it was designed to throws up two problems. The first is that it's exceeding its on-paper capability; the second is that this extra speed generally makes the processor power hungry, and so an increase in voltage can help boost your top speed.

B CHIPSET Generally a passive cooler is perfectly adequate for the north bridge chipset. It's potentially a cause of instability, which is why you can buy add-on fans for your motherboard chipset. However, the memory is most likely the area of concern, plus you'll need to own – or splash out on – a motherboard that offers decent overclocking features.

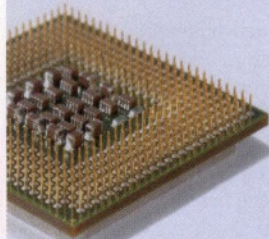
C BIOS RESET Before you even think about overclocking, locate your BIOS reset jumper and learn how to use it (consult your manual), as it's inevitable you'll have to reset things back to the factory default settings at some point. As always, if you do this, remember to disconnect the power to avoid any possible problems.

D MEMORY Unless your motherboard lets you choose a fixed memory bus speed, overclocking the CPU will also run your memory faster. So obviously overclocking RAM is going to help here, else we're going to have to fiddle with the timings to reduce the strain.

"You probably gave up overclocking because it wasn't stable or just didn't yield epic results"

Clock options

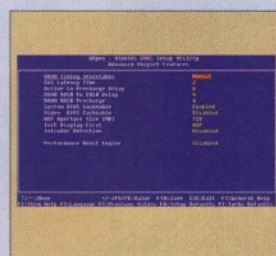
Choose your overclocking method



1 The most common way to overclock is to use your BIOS settings; doing it this way is long-winded but it ensures you think about it and take your time. That's essential in overclocking, as you should be making changes in small incremental steps.



2 Using memory features are just as important as your processor options. If you can't control what your memory is up to, then it's possible the FSB could go too high and if you are unable ramp back the timings, it could be in serious danger of failing, or worse.



3 Software overclocking utilities do make life a little easier, but they can also make you a little lazy and blasé about the process. It also leaves you at the mercy of the motherboard manufacturer – and this can be pot luck, as some are great, while others are less than helpful.

ON THE DISC



CPU-Z

Get to know exactly what FSB, voltages and other nonsense your system is up to with this tiny but essential utility.
www.cpuid.com/cpuz.php

Prime95

If you think you've got a stable overclock, think again, until you've run Prime95's stress test mode.
www.mersenne.org/freesoft.htm

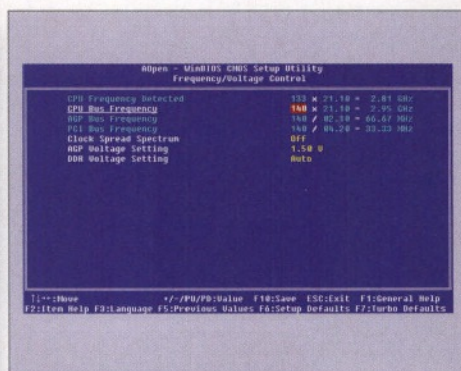
An overclocking session

Rewmember – you do this at your own risk

NEXT MONTH
WE'VE COVERED THE TECHNIQUES YOU NEED TO ACTUALLY GET GOOD OVERCLOCKS – NEXT WE'LL LOOK AT HOW YOU CAN IMPROVE RESULTS BY TWEAKING YOUR COOLING.



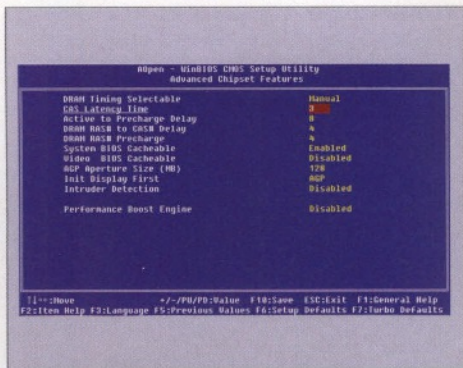
1 Make sure you have a well-mounted cooler and fan. This should have a thin layer of thermal paste on it. This is best achieved by applying a blob of the thermal paste to the CPU, placing the heatsink on it, removing it and wiping off any excess, then gently refitting it.



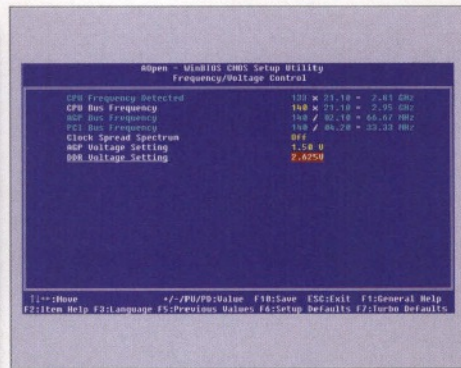
2 In either the BIOS or an overclocking app, you should be safe to make an FSB increase of five percent over the initial settings. We say this because it's general engineering practice to build in a five to ten percent redundancy on parts.



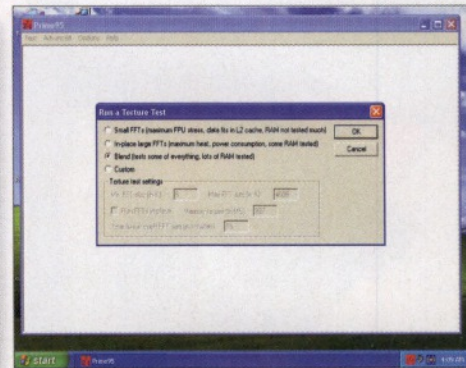
3 With this done successfully, your aim now is to steadily increase the speed until the system starts to show signs of instability. This should be after Windows XP has loaded rather than during or even at the POST stage, in which case you should hastily drop the speed.



4 After the you encounter first problem preventing you from overclocking further, you may well want to try and adjust your memory settings. We'd recommend reducing the timings to slower settings – such as from 2.5-3-3-8 to 3-4-4-10.



5 If you've eliminated memory or cooling from the possible cause of the instability then the next step is to increase your base processor core voltage by five percent. There's not much point going beyond this, as it'll gain you very little extra speed.



6 If you think your overclock settings are on the money then it's time to put your ideas to the real test. We suggest using Prime95 – as this really cooks your memory and processor and will give you a realistic idea of whether the system is really going to be stable.

Mark Sutherns delivers the latest mod offerings from around the technological globe



Mod teams are upping the ante. The latest evidence? A 15 minute movie presentation of a UT2004 Transformer inspired mod entitled CORProject (www.corproject.com). The movie is the first I've heard of the project but is clearly being developed with a degree of professionalism and dedication that typifies the new standard of mod making. I'll be keeping tabs on the project up to its impending release in the summer.

STRIKE A POSE

Not that I can afford to take my peepers off the *Half-Life 2* scene of course. But, rather than ponder the raft of ambitious total conversions currently in the works, I've chosen instead to toy with something a little off the wall. Garry's Mod (www.garry.tv/garrysmod) is a physics playpen that allows you to pose Valve's ragdoll models and a whole lot more. It's even conceived its own community of gamers.

My release of the month though is played out in *Doom 3*. Last Man Standing is similar to the *Max Payne 2* mini game, it's a question of how long you can stay alive against all that hell can vomit your way. The twist is that this mod eventually supports Aliens-style multi-player coop. When you consider that *Doom 3*'s multiplayer has gone down like a Satanist at Sunday School, that's a pretty exciting prospect. Grab the single player alpha at <http://lms.d3files.com>.



Garry's Mod – magnificent men in their vending physically perfect machines.

Have your say <http://forum.pcformat.co.uk>

Make a mod for Half-Life 2

part
123

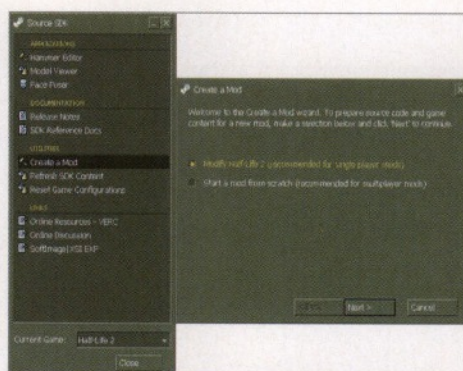
Over the last two issues we've talked about creating custom maps for an existing mod, *Counter-Strike: Source*, and creating new textures (now called materials) for *Half-Life 2*. We have also touched on adding new sounds. Any of these techniques can be applied to new or existing mods in the same manner as before. Now that we've learned how to create a majority of the assets we can put it all together and make a standalone mod.

So, here's a run through Steam's 'Create a Mod' wizard looking at how and why it does what it does. If you haven't already installed the *Half-Life 2* SDK, it can be downloaded through the Steam delivery system. It weighs in at approx 150MB and you must own *Half-Life 2* to get it.

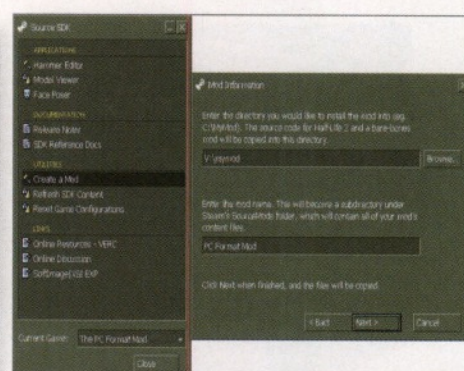
Remember, much like building model aircraft, creating a mod is not a simple business; it takes time and patience if you don't want to end up with a mess of superglue and acrylic paint. **PCF**

Mod building with Steam

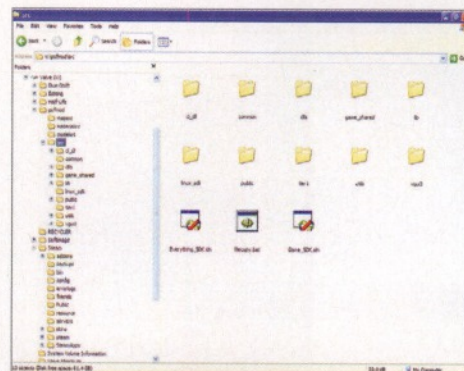
Consolidate and package your mod in the right way



1 Use the SDK launcher to start the 'Create a Mod Wizard', found under the utilities section. The wizard gives you two options to create a multiplayer or singleplayer mod – we'll choose **Multiplayer** in this case.



2 The second dialog asks for a location to be created where you will keep all your source files, such as map source, the targa textures and source code. It doesn't really matter where you choose, just use something simple to remember.



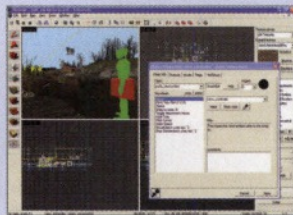
6 Take some time to explore the file structure that Steam has created. Place all your source files in the location selected in Step 2. The file structure creates a separate folder for maps, materials, models and source code.

"Modding is not a simple business; it takes time and patience..."

Make a simple Half-Life 2 mod

Menu-mental

A simple way to customise the loading screen



1 Background maps are designed for use in single-player Source games – they appear behind the menus when the game is launched. They are simply compiled maps like any other standard level, but should be small and fast loading.

2 Once you have made a map you'd like to use, you must set up the point of view with a '**point_viewcontrol**' entity that should look at an '**info_target**' entity. This must be triggered by a '**logic_auto**' entity on map load.

3 You can test the map background in-game by using the console command '**map_background mapname**'. Now to make it load automatically you can add the map name to the '**ChaptersBackground.txt**' in the scripts folder.

ON THE DISC



Softimage XSI Mod Tool

The official Valve endorsed 3D modelling program has been upgraded to version 4.2 and is available for free although some minor limitations do apply. www.softimage.com

Mod Tool Add-On

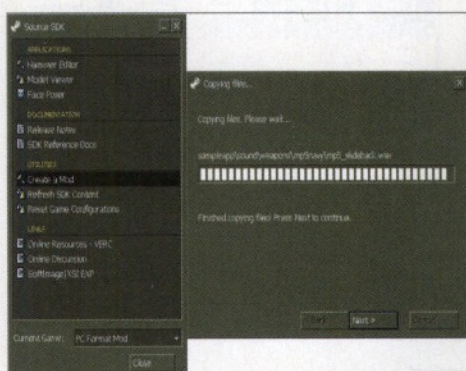
A necessary plugin for Softimage XSI whilst modding for the Source engine. Lets you import and modify maps, export models and much more. www.softimage.com

Paint Shop Pro

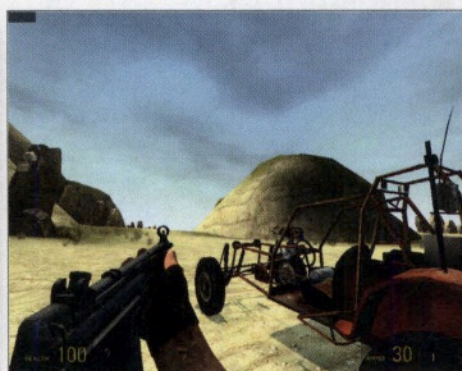
Still unrivalled as a freeware image manipulation program, and excellent for texturing, there simply isn't a better or more powerful alternative without bleeding you dry. www.jasc.com

Terrain Generator

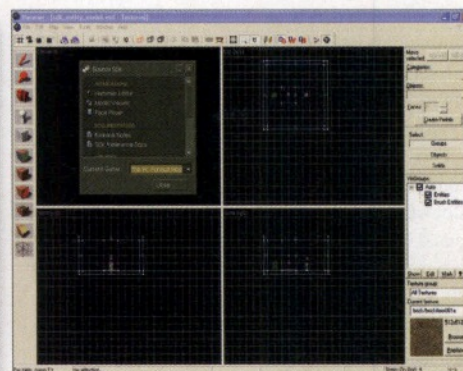
Hammer's default terrain editor can at times be cumbersome, especially over large areas. This software makes creating mountains and valleys is a doddle. <http://countermap.counter-strike.net/> Nemesis



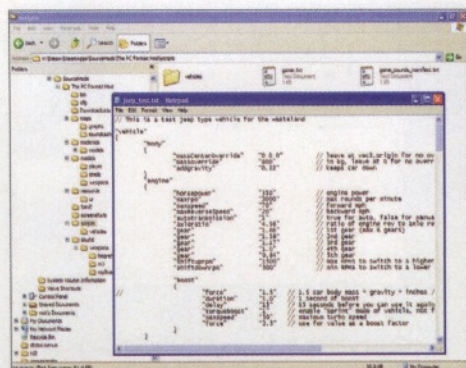
3 Before the wizard is complete, it asks for the name of your mod. Choose whatever you think is appropriate. It takes a few moments for the mod files to be copied over to their specific locations.



4 You can play this newly created generic mod straight away from Steam's **Play Games** window. If you don't see your mod under 'third party games' restart Steam and it will hopefully appear there.



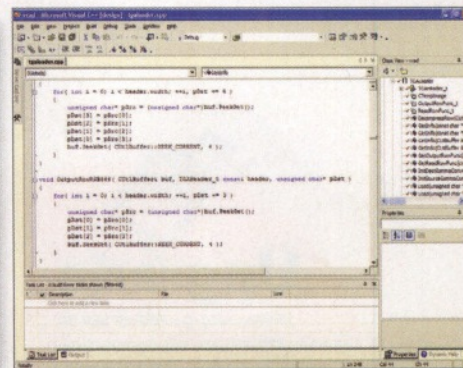
5 Steam will automatically create a new configuration system, so that its applications, such as Hammer, will compile straight into your new mod folder. Be sure the 'Current Game' option is set to your mod.



7 You will find the compiled mod under the '**Steamapps/Source mods**' directory. Here you can add or change sounds and various other things. Now open '**scripts/vehicles/jeep_test.txt**' with any text editor.



8 From here you can have some fun and change the properties of the Jeep. Try changing the max speed of it from 35 to 70. Play the '**sdk_vehicles**' map and enjoy the turbo-charged buggy.



9 If you're really adventurous – and a competent coder – you can explore and modify the HL2 source code. You will need a good understanding of the C++ language and a lot of patience, though.

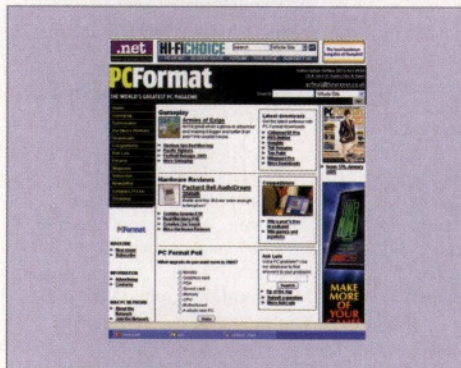
PDF-XChange Lite 3.0

Richard Cobbett on how to create PDFs without breaking the bank

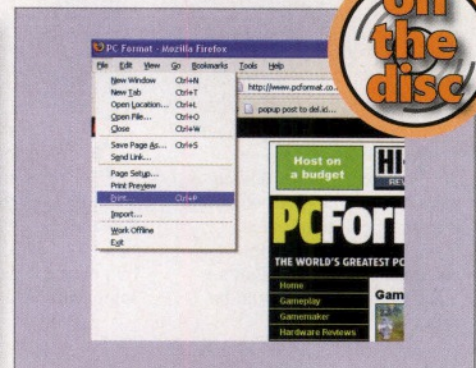
Documents can be more trouble than they're worth. That .doc file that looks perfect on your machine can be ruined, just by opening it up on another computer – missing fonts, broken layouts and a simple lack of compatibility even between the same application (Microsoft, we're looking at you...). PDF files sidestep the issue entirely, looking precisely the same on PC, Mac, Linux, or any other operating system you care to throw them at – not to mention guaranteeing that what you see on screen is what will be printed out to the paper in your printer. All anyone needs to view any PDF is a copy of Adobe Acrobat Reader, downloadable from www.adobe.com, also available on this month's coverdisc.

The only catch is that the full version of Adobe Acrobat itself, the leading PDF creator, costs roughly ten billion pounds a copy (give or take) – not particularly helpful if you just want to save out files for home use. PDF-XChange Lite offers a much easier alternative, simply by printing almost any document to hard disk as a PDF file. As long as an application supports printing, you can create PDFs from it.

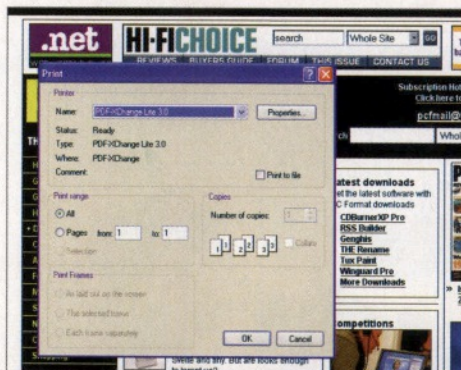
To get started, you'll need to register the software online. Head for www.docu-track.com/promo/register and enter the promotional code **PCplus\$126004LiteMax**. Make sure you provide a valid e-mail address, as the serial number will be e-mailed to you rather than displayed on screen. Once inputted, reboot your machine to finish installing the driver, then run PDF-XChange Lite and any application that you want to create PDF files from, and away you go. **PCF**



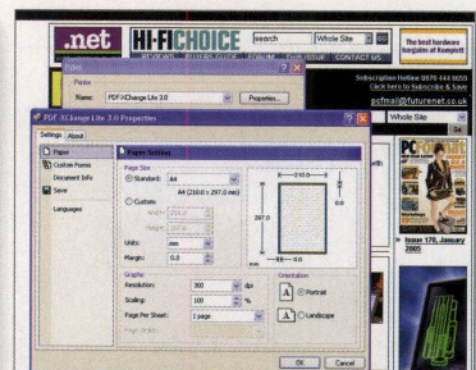
1 Install PDF-XChange, then find an application to export from. Office applications such as Microsoft Word are the most common choice, but you can just as easily create PDFs from your favourite websites, high-score tables or anything else that can print.



2 Launch the application, and click the **Print** button. Don't use shortcuts on your application's toolbars unless you don't have a printer installed, otherwise it'll use the default settings rather than giving you the choice to use the PDF-XChange printer option.



3 From the print dialog, choose the newly added PDF-XChange print driver. You don't need to select **Print To File** – that's implied by your choice. Once begun, the only thing you need to tell the software is what you want the resulting PDF document to be called.



4 Additional properties are available, ranging from paper size to document metadata. This makes it possible to add author names, category information, keywords and other important information – but you can skip it if you know you'll never need it, which is likely to be most of the time.



5 Hit the **Print** button and your PDF is created. This can be read with any copy of Adobe Acrobat Reader (or other PDF viewer). All fonts and other essential bits of information are embedded straight into it, ensuring it looks as designed on any PC.



6 There are a few other settings to make use of, accessed from PDF-XChange's entry on the start bar. You can alter your choice of language, as well as decide how long PDF-XChange should remain loaded before shutting down – but really, there's nothing essential here.

Upgrade

Usually sold at a RRP of \$69.50 (Approx £37.50), you can upgrade from Lite to Pro at half price, just \$34.75 (£18.75) +VAT. Log in with the user name and password you created during registration to get your 50% off. www.docu-track.com/promo

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Digital Camera Shopper,
October 03:
Rating: "4/5"
Award refers to the previous version
MAGIX Photos on CD & DVD 2.0 deLuxe.

PC PLUS, 20/03:
"Overall: 9 out of 10"

Award refers to the previous version
MAGIX Movies on CD & DVD.

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see. hear. feel. create

Copy your registry, COM+ database and boot files; you never know when you'll need them

One of the first little-known features of Windows XP that you should take advantage of is the Backup Utility. As unexciting as it may sound, it's one of the most valuable programs not to have made it into Windows XP properly, despite the fact it's an honest-to-goodness Microsoft app. By default it's not installed on your PC with the rest of the operating system; you'll need to install it manually.

ADDED VALUE

You'll find what you need on your original Windows XP CD (pictured). Use **My Computer** to explore the CD and open the **VALUEADD** folder. Go through the **MSFT** and **NTBACKUP** folders

and double-click on the **Ntbackup.msi** file to launch the **Backup Utility** installer. The **VALUEADD** folder and its contents aren't always included on OEM CDs, so if it's missing get on the blower to your retailer.

SKIP THE WIZARD

Once installed, the Backup Utility will reside under **Accessories** → **System Tools** in the Start Menu. Upon starting it you can abandon the wizard and head for the

Advanced functions. Click on the **Backup** tab and you'll have the option to pick and choose what you'd like to copy.

REGISTRY BACKUPS

In the panel on the left, you'll find your system files listed as **System State**. Backing up your registry, COM+ and boot files is a no-brainer when you're about to start tweaking

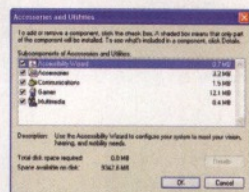
deeper parts of your operating system or installing beta software. Better to be safe than sorry.

Have your say <http://forum.pcformat.co.uk>

Windows XP Secrets

part
12

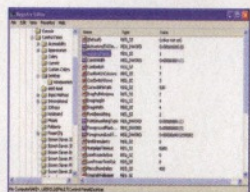
So, think you know how to get Windows XP to bend to your will? Well, so do we and in an effort to ensure that this remains so, we've been delving into the deep, dark recesses of Bill's finest to bring you a collection of hidden, secret and other various little-known features to help you get the most from your PC.



UNINSTALLING COMPONENTS

You can forcibly remove previously uninstallable parts of Windows XP by altering the **sysoc.inf**

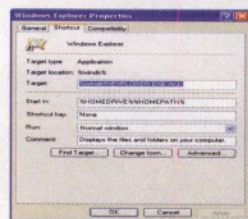
file from **C:\WINDOWS\inf** in Notepad. Remove the word **HIDE** from between the two commas in the list of all the items running down the page, leaving the commas intact. Save the file, restart and you'll find more disposable components listed in **Add/Remove Windows Components**.



FORCE SYSTEM SHUTDOWNS

If you find non-responding programs preventing your PC from shutting down, edit the following

registry key: **HKEY_USERS\DEFAULT\Control Panel\Desktop**. You'll need to amend the value of **AutoEndTasks** to equal 1 to banish the prompts that prevent Windows from shutting down.



STREAMLINE EXPLORER

Have Windows Explorer open the folder you want by right-clicking on it, selecting properties and changing the

Target. Type **%windir%\EXPLORER.EXE /e,c:** and click on **Apply to open** showing the contents of drive C. You can alter the drive by replacing c with another letter. You can specify that Explorer open a sub-folder by adding \ and then the name of the folder.

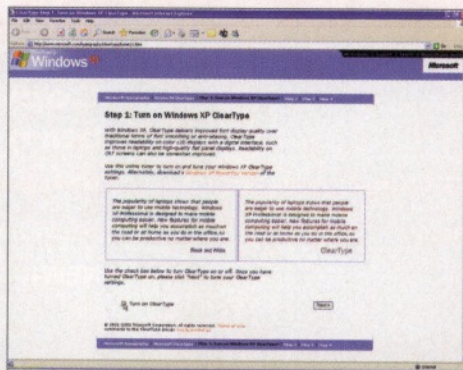


MEET GPEDIT

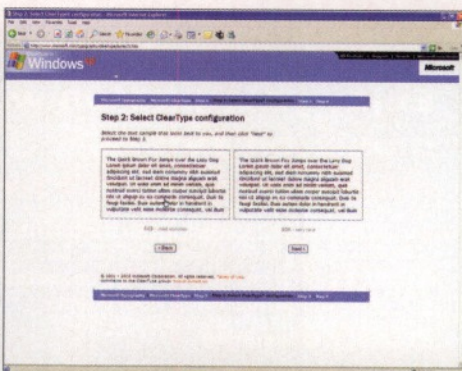
The Group Policy Editor is a little like **msconfig** in that it enables you to go behind the scenes and alter the way that the operating system behaves. GPedit provides you with a far wider range of usable options though, including customising Internet Explorer (see the

Tuning ClearType

Improve on-screen font smoothing in Windows XP



1 Open up your internet browser and go to www.microsoft.com/typography/clearType/tuner/1.htm. If you are using Internet Explorer, then you need to allow the ActiveX control to be installed and turn on ClearType by ticking the box.

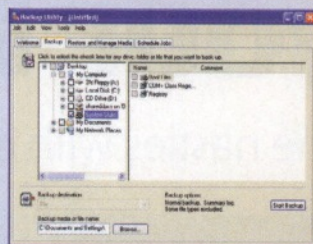


2 You'll be presented with two samples of text and will be asked to pick the clearer of the two. It'll likely be the one on the left, unless you've an unusual LCD display that reverse-orders the pixels (certain iBooks and the GameBoy Advance do this for some reason).

The secret functions of Windows XP

Customise IE

You can replace ISP branding or the wavy Microsoft flag with your own logos and toolbar backgrounds in Internet Explorer using the Group Policy Editor (enter **gpedit.msc** in the Windows Run dialog). Click on **User Configuration Windows Settings Internet Explorer Maintenance** and then **Browser User Interface** to access the customisation settings. Double-click on the appropriate icons to alter the values. Logos must be bitmaps 22x22 and 38x38 pixels in size. The toolbar bitmap can be any size you want as it'll be tiled; experiment with an image 60 tall and 120 wide. You can create animated logos with Microsoft's Internet Explorer Administration Kit which you can download for free from www.microsoft.com/windows/leak.



box above right) and specifying what items you want to see as part of your XP Pro installation. You can open the utility by typing **gpedit.msc** in the Windows Run dialog. Click on **User Configuration** and then **Administrative Templates** to tweak and customise the desktop, taskbar and Start menu.



HIDE YOUR DRIVES

Got a flatmate, friend or family member who's rather too nosy for their own good?

Well, rather than resort to locking down your PC with passwords you can hide your data from view by concealing your hard drive or its partitions. Simply open **regedit** and work your way to **HKEY_CURRENT_USERS\Software\Microsoft\CurrentVersion\Policies\Explorer**. In the Explorer key create a new DWORD value and call it **NoDrives**. When the value of **NoDrives** is set to 0, all drives are visible. To hide a drive, select the decimal base and modify the 0

to 4 for C:, 8 for D:, 16 for E: and so on. You can hide multiple drives by adding their numbers; to hide C: and D:, enter 12.



THROW OUT ICON NAMES

A truly tidy desktop isn't one without any icons whatsoever, despite what Windows XP's

desktop cleanup wizard thinks; those shortcut icons are handy to have around. What makes a tidy desktop is removing the names from underneath them. Try selecting the text and deleting it; it won't work. What you need to do is activate **NumLock** and, while holding down **Alt**, rename the icon 0160 using the number pad. Let go of **Alt** and hit **Enter** and you'll have an anonymous icon. How does it work? Well, 0160 is the ASCII code for a space. If you get the message that a file already has that name, just enter 0160 0160 and so on to create a different number of spaces. **PCF**

ON THE DISC



Service Controller XP 2.2

We've covered the process of disabling the myriad system services that run in the background of Windows XP and how you can eke out an extra few miles per hour by doing so. This app will do the legwork for you. www.freeware-alternative.uni.cc/downloads/service-controller-xp/service-controller-xp

AllSnap

Tile the program windows on your desktop and have them 'snap' together like **Winamp** modules, aligning them automatically on-screen. Because the windows hook each other, you can drag and resize without un-snapping. <http://members.rogers.com/ivanheckman/#Running>

ChangeExt

View extra information when you right-click on a file within Windows XP with this app. You can quickly view the file's extension, its attributes, size, any relevant dates and copy its characteristics to the clipboard for future referencing. www.geocities.com/justaskcomp

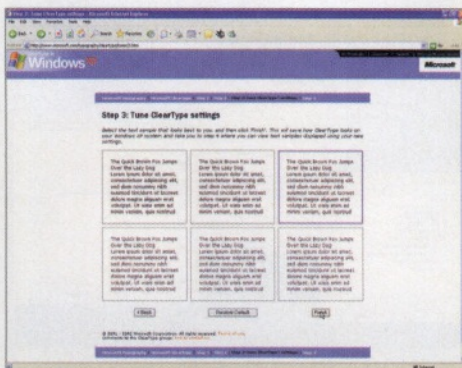
X-Setup

This is one of the most comprehensive Win XP tweaking and tuning utilities available and will enable you to customise everything from boot options to internet settings without delving into the registry. www.x-setup.net

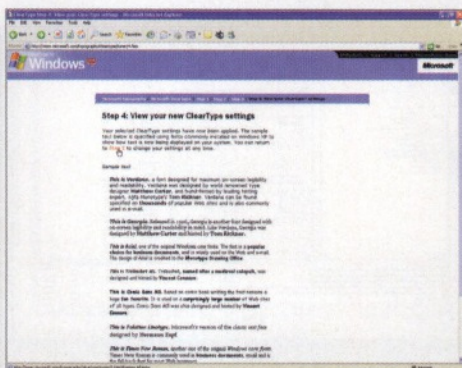
"GP Editor lets you to go behind the scenes and alter the way that XP behaves."

NEXT MONTH

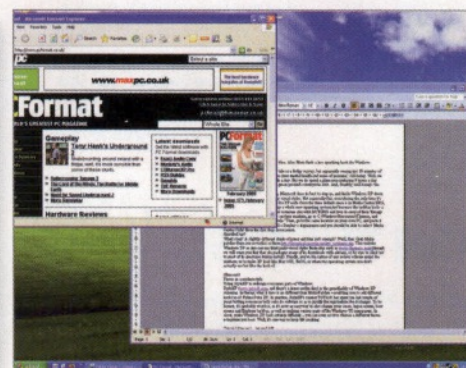
MORE OF XP'S HIDDEN TREASURES AND UTILITIES, SO STAY TUNED IF YOU WANT TO STAY THREE STEPS AHEAD OF YOUR CHUMS WHO ARE JUST GETTING TO GRIPS WITH MSCONFIG...



3 Once you've chosen between RGB and BGR, you'll have the opportunity to select between six different levels of boldness. The settings differ by the shade of grey, with the lightest shade at the bottom right of the screen and darkest at the top left.



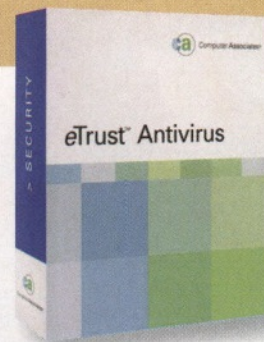
4 While adjusting the boldness, choose the level that provides the best clarity and legibility on your screen. Every LCD panel will differ slightly and everyone has their own personal preferences, so go with what looks best to you and your machine.



5 It's useless to try and gauge your settings with a single font (and Verdana, at that), so check it with the various fonts displayed. Open up a few documents and web pages of your own to properly test it and see how it looks. Then go back and adjust accordingly.

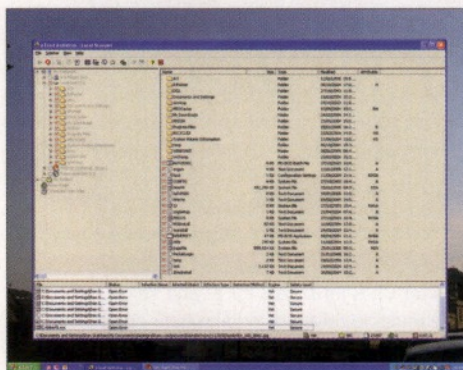
Protect your PC

Chris Thornett *chases out the nasties with eTrust Antivirus*

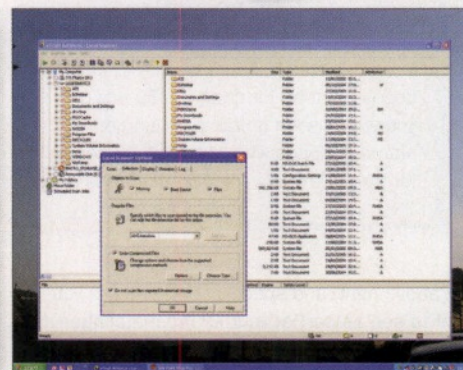


Not all antivirus software is built the same, so it helps to see a string of awards for previous variants of the app you choose. You get a double detection whammy with Computer Associates's eTrust Antivirus, a fully-functional 90-day trial of which is on this month's coverdisc, as it ferrets out viruses, worms and malware using both signature-based and heuristic techniques. Dual detection is only impressive if it means something. CA makes a living out of being seriously impressive with its heuristic methods (ie rooting out viruses without specific definition files), which have a 100 percent 'in-the-wild' record for finding and fragging the untamed nasties, certified by ICSA Labs. eTrust AV's viruses signatures are updated daily for free (you'll have to subscribe to the service after 90 days if you want to continue to receive the updates), which is backed by CA's quaintly named Threat and Analysis Response Global Emergency Team, or TARGET to you and me.

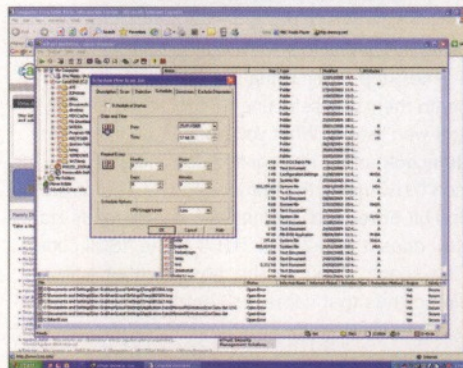
As well as providing thorough system scans on demand and to a schedule, eTrust also includes real-time monitoring, checking all in and outgoing files for signs of infection to the settings you specify. You'll also need to set the frequency of your virus signature downloads as well, which can be as often as once a minute if you're obsessively paranoid. **PCF**



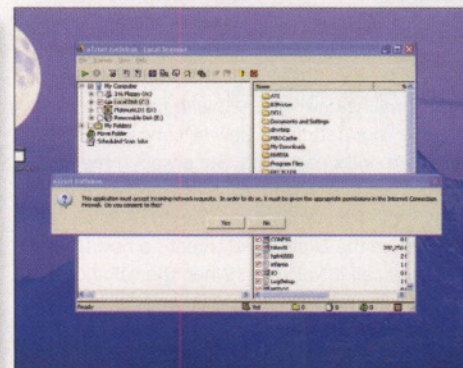
1 First port of call after installation is the real-time scanner. If you've ever used another anti-virus app before, you'll know the routine here – select the drives and/or folders you want to scour for viral infection, then click the green play icon at the top to search for nasties.



2 You may want to configure a few options before you run a complete system scan. As well as choosing whether to crawl the likes of memory, boot sector and compressed files, you can choose between the InnoculateIT and Vet engines. It's worth trying out both.



3 From the icons in the top toolbar, select **Schedule**. Here, it's worth setting up a time, date and frequency for eTrust to run an automated regular search of your system. Don't worry, you can always cancel if it starts up while you're busy using your PC for something else.



4 If you're running Windows XP SP2 running with the default firewall, you'll need to unblock the ports that eTrust Antivirus needs. Currently, you'll need to install the **AVEnablePorts.exe** utility, from the coverdisc or [ftp://ftp.ca.com/pub/inoculan/AVEnablePorts.exe](http://ftp.ca.com/pub/inoculan/AVEnablePorts.exe)

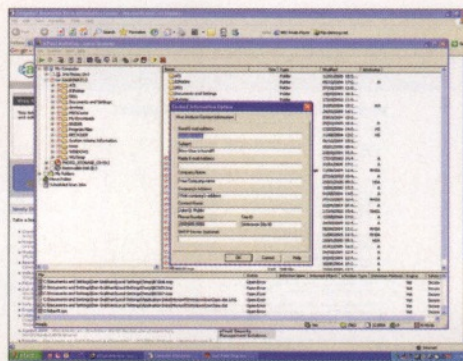
Upgrade

Save money and secure your machine for a year or more. Visit the website below and pick up your annual licence for £29, or two years for £39 and four years for £59 www.excide.com/futurenet/index.jsp?language=en

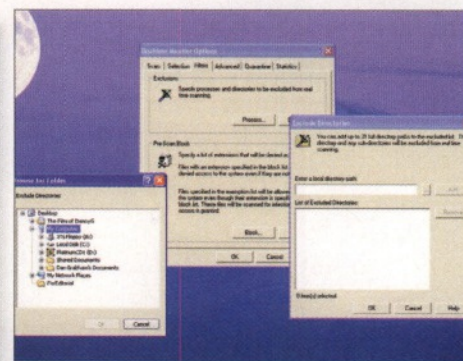
ON THE DISC

eTrust Anti-Virus
The subject of this here tutorial. On the coverdisc is a fully functional version of this award-winning virus checker, which will happily grant you 90 days of protection. www.my-etrust.com

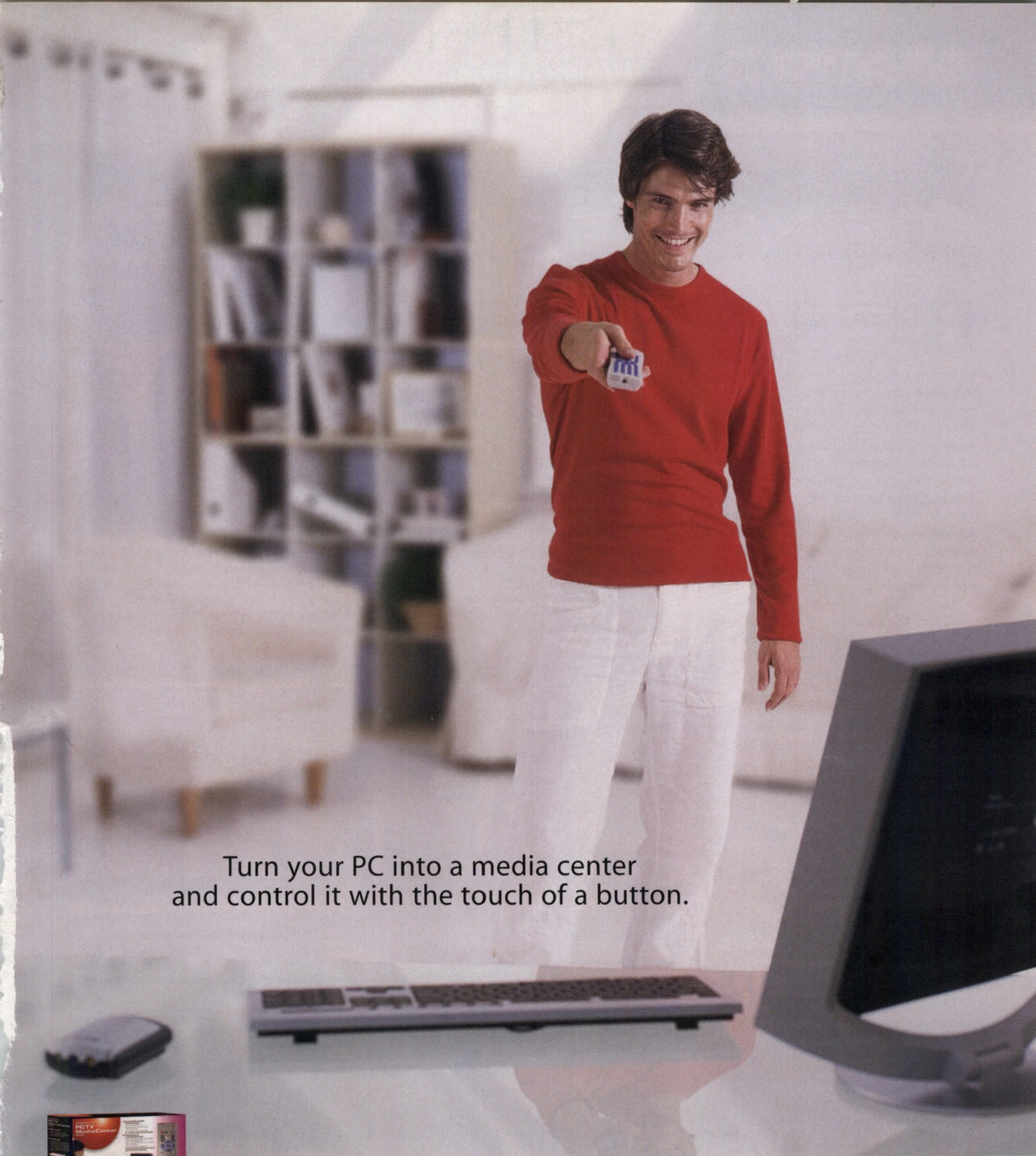
ZoneAlarm
Thanks to eTrust, your PC's safe on the virus front – and with the free ZoneAlarm firewall, you can neatly block out hackers from breaking into your system and stealing your files. www.zonelabs.com



5 There's also a boatload of virus treatment options. Infected files can be reported back to CA (as pictured), deleted, renamed, moved or you can attempt a cure. Even the cure options are extensive. You should make sure the 'System Cure' option is checked.



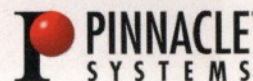
6 The Exclusion list and Pre-Scan blocker are great features of the real-time scanner that will cut slices off your scanning time. The blocker is particularly useful as you can train it to only allow you to open certain files until they've been scanned or block certain file names completely.



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Animation with Bryce 4

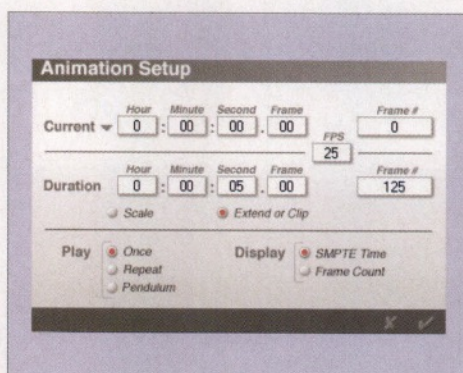
Ed Ricketts closes the *Bryce* chapter by looking at animation

part
123

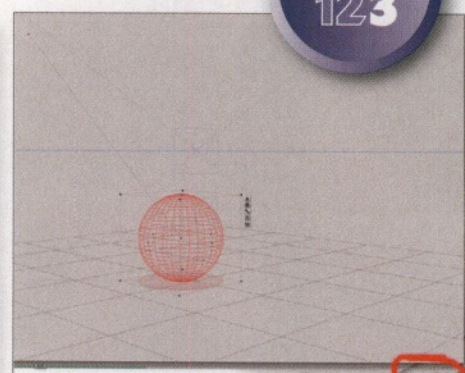
Been playing with *Bryce 4* over the last couple of months? You can't have failed to notice that it also sports animation features. As with most things *Bryce*, these are divided into the quick-and-easy controls – all available at the bottom of the main screen – and a more sophisticated Advanced Motion Lab. The latter can be used to tweak motion curves and make direct changes to objects' parameters, but for straightforward motion, the main controls are adequate enough.

Like just about every other package, *Bryce* works on keyframe animation, filling in the gaps between any changes in size, scale or whatever that you indicate. However, keyframes are specified in terms of real-world time rather than arbitrary numbers of keyframes. So for example, if your animation lasts five seconds, and you change the frame rate from 15fps (frames per second) to 25fps, it will still be five seconds long, but should look a lot smoother.

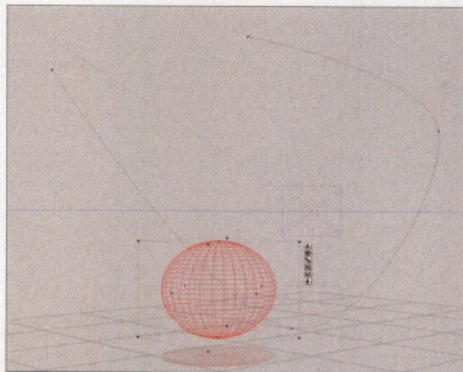
It's worth noting that just about anything can be animated in *Bryce*: objects, the camera, textures, clouds, the sun and moon, and so on. And all this can be done using the same simple set of controls. So let's look at the basics... **PCF**



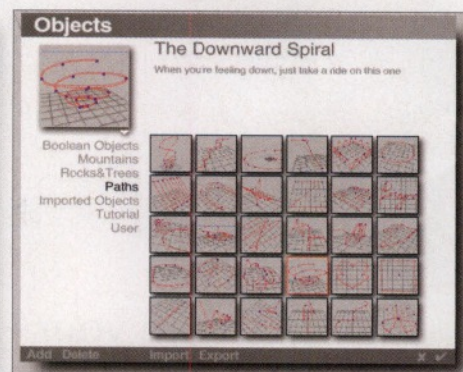
1 Before you begin your animation you'll probably want to change its frame rate. *Bryce* defaults to 15fps, which a bit too jerky. Use **File→Animation Setup...** for this. You can also set an overall duration here of the animation, but it's not strictly necessary.



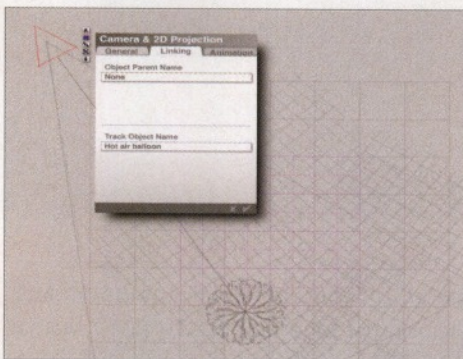
2 *Bryce* also has an Autorecord feature for creating animations, but it's actually less confusing to do it manually. Once you've set up your scene, then click the **+** next to the key icon at the bottom of the screen. This creates an initial keyframe for all objects to refer to.



3 Now drag the time bar to where you want the keyframe, move/scale/whatever your objects, and click the **+** again. You'll see the motion path of the object appear as a Bezier curve. Its points can be moved in space to adjust the path your object takes.



4 There are a variety of premade motion paths supplied with *Bryce*, unfortunately though, not all of them are particularly useful. Click the arrow next to the main Create menu heading, then navigate to the paths option to have a browse through supplied options.



5 If you want the camera to follow (track) an object's motion, just link the two. Select the camera, click the **A** for **Attributes**, go to the **Linking** tab, and choose the object in the **Track** object name list. Any object can be linked to another's motion in this way.



6 One good way of getting a preview of your animation is the **Storyboard** mode. Click the **Preview Animation** in the animation area for this; *Bryce* renders mini-previews of various frames and plays them back. This is useful for jumping to particular frames and making adjustments.

Upgrade

There's plenty more to discover in *Bryce 4* – but if you fancy even more power, why not move up to version 5? You can save 25% on the RRP of £50. Enter the code **BRYCE5UPFTRCO** in the site below. Expires 31st March. www.bryce.daz3d.com

ON THE DISC

Art of Illusion

A free, open-source 3D modelling and rendering studio written in Java, so you'll need a decent Java Virtual Machine to run it. www.artofillusion.org

Java Virtual Machine

And funnily enough, here's a decent Java Virtual Machine – the

official version from creators Sun Microsystems, in fact. www.java.com

3D Canvas

Groovy real-time 3D modelling and animation tool with a drag-and-drop system that enables you to slap together complex objects in minutes. www.amabilis.com

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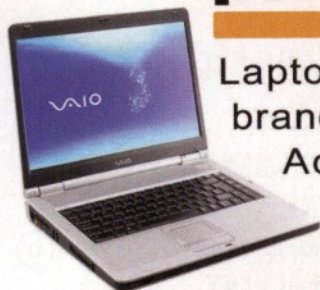
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As standard our PCs come with 1 year warranty,
free delivery and a game + software bundle.

Programming DirectX9 for Beginners

In the final part of our Direct 3D tutorial Ken Paulson takes a step-by-step look at adding lighting and textures to your 3D objects

part
1234

Tracking Time

By computing how much time has passed since we last drew our cube, we can calculate how much the cube should rotate.

Spinning

This calculates the cube's current rotation.

```

6. D3DMATERIAL9 matDiff;
   d3d_device->SetMaterial(&matDiff);
7. now=GetTickCount();
   second_passed=now - last_time/1000.0f;
   last_time=GetTickCount();
8. x_rotation += second_passed;
   y_rotation += second_passed;
   D3DXMatrixRotationYawPitchRoll(&world_matrix, x_rotation, y_rotation, z_rotation, 0.0f);
   d3d_device->SetTransform(D3DSTS_WORLD, &world_matrix);

```

With this fourth and final tutorial for DX9 commands, we are going to actually go 3D. In the past lessons we've set up our camera and our scene, but while the graphics were drawn by 3D hardware they still looked flat.

This time we will be drawing a cube. To show that it is a real 3D object it will spin in place. Adding a texture will make our plain cube much more interesting. Despite all of this, the cube still lacks a sense of depth; this is where lighting comes in. A shiny specular highlight adds that extra bit of polish and realism.

From here the world of 3D graphics is wide open. For a simple change, you can try replacing the provided texture with an image of yours, though if your image is not square or quite a bit different in the size of a panel, the results might look a little strange when shown on the cube model.

Diving into the code, you can play with light position and colour. Try adding a light or changing the cube's material.

There is a wealth of information available on the web for budding game and graphics programmers. GameDev.net (www.gamedev.net) is one of the premier game development sites. Not only does it provide a wealth of articles, but it also boasts a vibrant community in its web forums.

For a tighter focus on Direct3D, Drunken Hyena (www.drunkenhyena.com), this author's site) features tutorials which dig deeper into many topics than was possible in this short series. **PCF**

And in the end...

Putting it all together

```

struct pcf_vertex{
    float x, y, z;
    float nx,ny,nz;
    float tx, ty;

    const static DWORD flags = (D3DFVF_XYZ|D3DFVF_NORMAL|D3DFVF_TEX1);
};

```

1 Our new vertex format now has a **Normal** which is used as its "facing" to calculate how much light is hitting it. The **Texture Coordinates** normally range from 0.0 to 1.0 and specify how a texture maps to the object.

```

pcf_vertex g_vertices[] = {
    //Position      Normal      Texture Coordinates
    (-1.0f,-1.0f,-1.0f, 0.0f, 0.0f,-1.0f, 0.0f, 1.0f ),
    (-1.0f, 1.0f,-1.0f, 0.0f, 0.0f,-1.0f, 0.0f, 0.0f ),
    ( 1.0f, 1.0f,-1.0f, 0.0f, 0.0f,-1.0f, 1.0f, 0.0f ),
    ( 1.0f, 1.0f,-1.0f, 0.0f, 0.0f,-1.0f, 1.0f, 1.0f ),
    (-1.0f,-1.0f,-1.0f, 0.0f, 0.0f,-1.0f, 0.0f, 1.0f ),
    (-1.0f,-1.0f,-1.0f, 0.0f, 0.0f,-1.0f, 0.0f, 0.0f ),

```

2 For brevity only the front face of the cube is shown – the other faces are very similar. Within each face the value of the Normals will be identical. The texture is mapped so the top-left of the texture is at the top-left of the face.

"The cube still lacks a sense of depth; this is where lighting comes in"

```

d3d_device->SetRenderState(D3DRS_LIGHTING, TRUE);
d3d_device->SetRenderState(D3DRS_AMBIENT, 0x00151515);

D3DLIGHT9 light;
ZeroMemory(&light, sizeof(D3DLIGHT9));
light.Diffuse.r=1.0f;
light.Diffuse.g=1.0f;
light.Diffuse.b=1.0f;
light.Position=D3DXVECTOR3(-1.0f,1.0f,-8.0f);

d3d_device->SetLight( 0, &light );
d3d_device->LightEnable( 0, TRUE);

```

6 Turning on lighting will go a long way towards our goal of making the object look realistically 3D. Ambient light is added so that object faces aren't totally black when facing away from the light. Our light is bright white and angled over our viewer's left shoulder.

ON THE DISC

YOU WILL FIND AN EXPANDED VERSION OF THIS TUTORIAL AND THE FULL CODE



Basic Direct X9 lighting

Enabling Lighting

A small amount of ambient light is added to the scene. Lighting is enabled. A specular highlight is also enabled for an extra bit of polish.

Vertex Definition

Our vertices have a position, normal, and texture coordinates.

Light Modulates Texture

The colour for each pixel is determined by the texture modulated by the amount of light it receives.

Adding a Texture

The texture is loaded from a file and then set as an active texture.

Light Setup

A light is added to the scene and assigned a reference index of 0.

Object Material

The material of an object controls how it interacts with light.

ON THE DISC

Dev-C++

A free integrated development environment for C++ with an integrated debugger and syntax highlighting.
www.bloodshed.net

Texture Maker

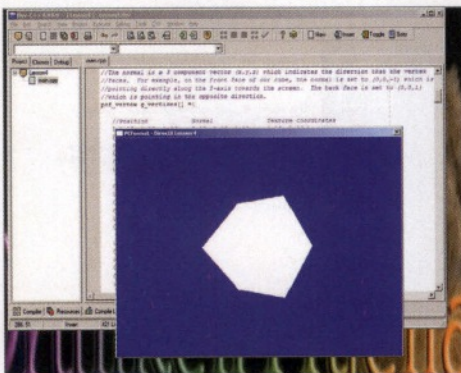
Texture Maker is a seamless texture generator and designer. The application contains everything needed to create seamless textures for use in 3D rendering packages and game development.
<http://texturemaker.thegamecreators.com>

Cubetro

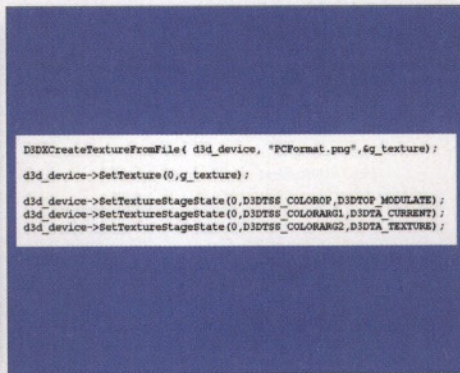
A Direct3D demo featuring cubes by the Northern Dragons demo group. It took second place in a recent demo competition.
ftp://ftp.scene.org/pub/parties/2004/pilgrimage04/demo/cubetro_-_nd.zip

GIMP

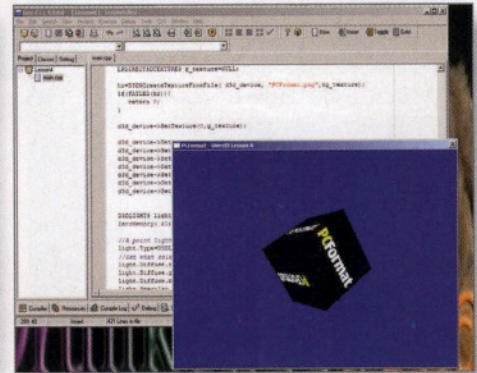
The GIMP is the GNU Image Manipulation Program. Freeware software for such tasks as photo retouching, image composition and image authoring.
www.gimp.org



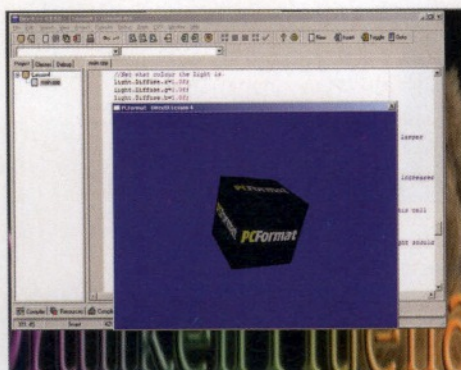
3 Though comprised of 3D geometry, the cube looks like a vague white blob. There's no sense of depth and the faces blend into each other since they're bright white with no detail. To resolve this we need to texture it.



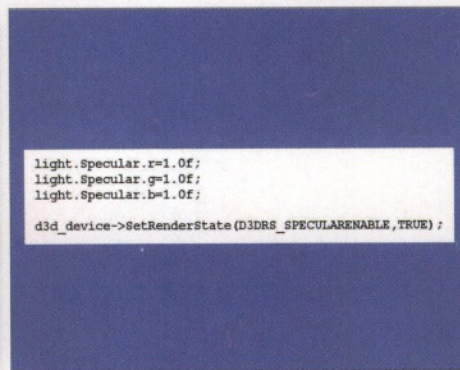
4 Here we load our texture and set it as the active texture. Since lighting is disabled the light level in our scene is treated as if it's flooded by a bright white light. This will show our texture as if perfectly lit.



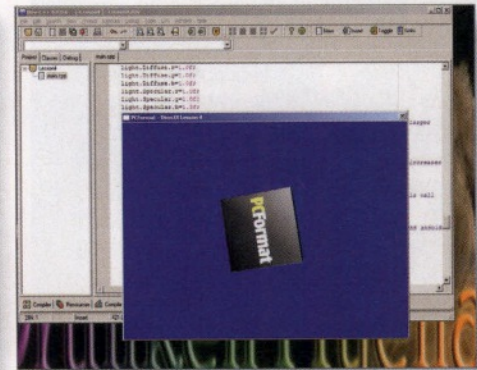
5 This is far better than the last image. The faces of the cube now have some detail but the faces still blend together a bit too much. It also doesn't look much like a real 3D object, it's too flat looking.



7 The sides that face the light now have more light than then ones facing away. This lighting makes the cube have more of a sense of depth and proportion. While watching the cube spin, you can get a real sense that it is now a realistic 3D object.



8 A specular highlight makes a surface look shiny. Metallic as well as plastic surfaces often show this to great effect. Your favourite canned beverage is now a valuable lighting research tool! Buying six at a time is effective both from scientific and economical standpoint.



9 We hope this series has helped you understand what goes into a 3D application. If it has whet your appetite for more, the sites mentioned earlier will provide a good source of information that can take you as far as you want to go.

More legal action for Microsoft, and a new spyware program. **Craig McBeth** investigates

A Romanian anti-virus company is all up in arms after Microsoft's recently-released beta version of its new anti-spyware program (see news on p 18) identified its **Online Scan** program as **spyware**, when the company insists that it's not. BitDefender, the program's maker, says having its application described as spyware is similar to libel – as it devalues the company's value because of the association that the word spyware carries. It doesn't look like BitDefender is going to follow through legally, but it wants to make its point publicly, and also criticise Microsoft's response to such complaints – BitDefender says it didn't receive a reply for over ten days.

ULTIMATE SPYWARE

In other, far more distressing news, it turns out that anti-virus firm **3ami** and storage specialist **BridgeHead Software** have developed a new program for corporate clients that will enable them to store every keystroke, website and button pressed or visited by an employee. Eep... Red flags and alarm bells anyone? The trouble is, this app has been designed to comply with the

new **Freedom of Information Act** – which requires companies to store all their information for a number of years. The program has been made to a legally-binding standard and can trace the history of individual

documents and files, who they were sent to, when and where they were opened or modified, and who left that little note casting aspersions on the boss's sexual habits... Who's a **Big Brother** fan now?

Employees will be under the microscope with the latest spyware.

Have your say forum.pcformat.co.uk

Safe surfing with Internet Cleanup

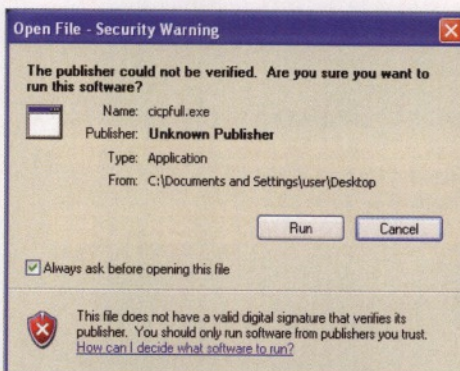
One of the sad signs of the times is when you are forced to buy anti-virus software, anti-spyware apps, password-protected locking mechanisms and encryption apps to hide you away from the world while logging on to the net, given that the web's such a revolution to the concept of community.

You do need to make sure that when you step outside the safe-haven of your firewall, you

leave no evidence behind (sounds more like a murder-mystery weekend). Fortunately, we've managed to round up a full version of the award-winning *Complete Internet Cleanup Pro* utility from PCMesh for our coverdisc. It will effectively destroy all your online tracks (to stop third parties using your browsing habits as marketing data, reclaim hard disk space by wiping out unneeded temporary files, and will stop other folk who use your PC knowing what you've been looking at. **PCF**

Stealth-like surfing

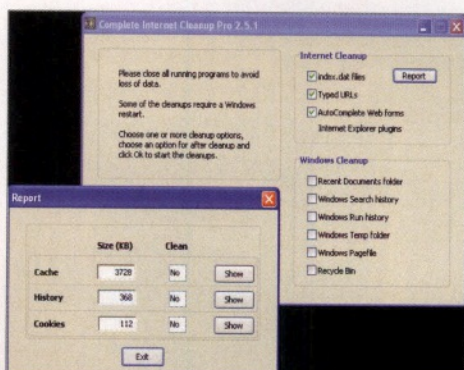
A-Z of Complete Internet Cleanup Pro



1 You need to install *Complete Internet Cleanup Pro* – you'll find it in the **Web toolkit** in the **Workshops** section of the coverdisc. When installing, Windows may worry that it doesn't know what the application is – ignore it, and just click **OK**.



2 From here a wizard will guide you through the installation process, after asking you to close all other applications. You'll also need to agree to the application's terms and conditions before the program will install on your computer's hard drive.



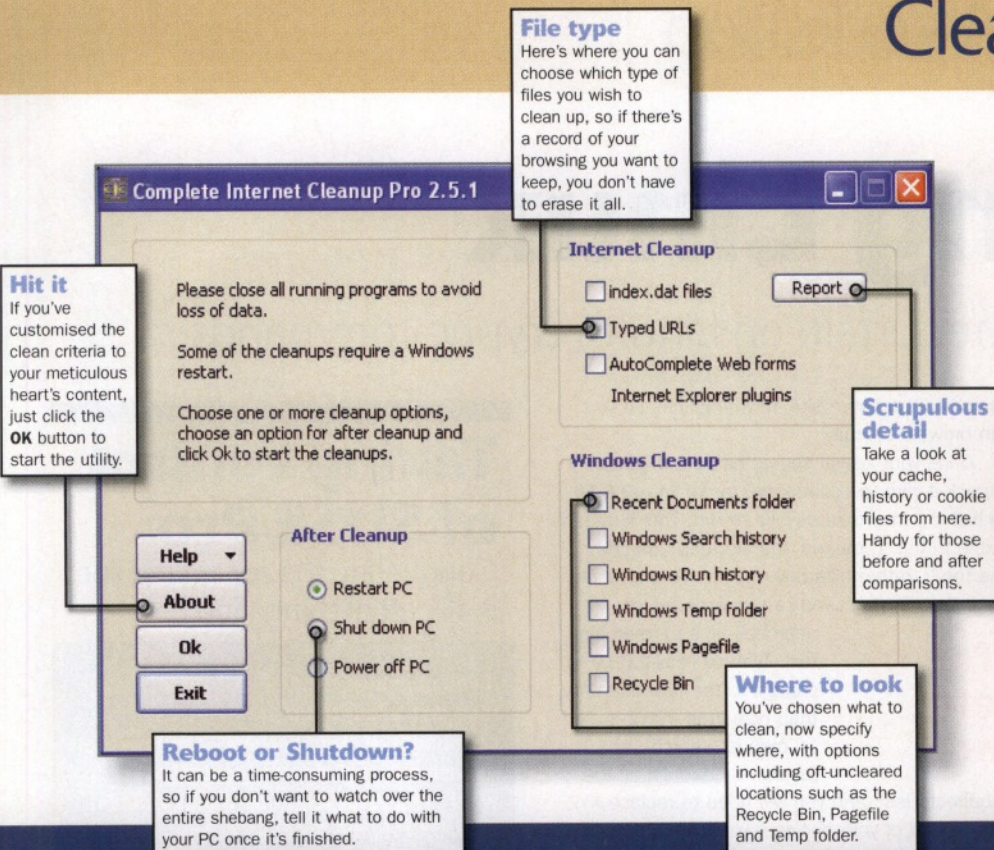
6 Before you start using *Complete Internet Cleanup Pro* to clear out your internet history, you may be interested to have a gander at what is actually being stored on your computer. Click the **Report** button to bring up another box of tricks.

Upgrade

Impressed by Complete Internet Cleanup Pro? How's about a whopping 35% off PCMesh's All Products Pack?

Visit <http://secure.emetrix.com/order/dc.asp?PID=12095612> and enter code 2fpm2005jan.

Clean up your tracks



ON THE DISC

Ad-Aware

An essential app to scrutinise your PC for any type of devious ad software. Best to be used before installing CICIP to clear out any hidden programs.
www.download.com/Ad-Aware-SE-Personal-Edition/3000-8022-4-10045910.html?

Mozilla Firefox

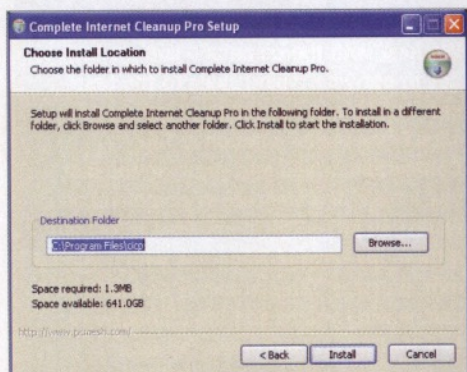
One of the best ways to stop becoming victim to an internet hacker is to use a less popular, but more secure browser. Firefox is our fave.
www.mozilla.org

Spybot – Search & Destroy

Best used before installing CICIP, as it does what it says on the tin, eradicating any spyware that might be monkeying around with personal data on your PC.
www.safer-networking.org/en/spybot/index.html

ZoneAlarm

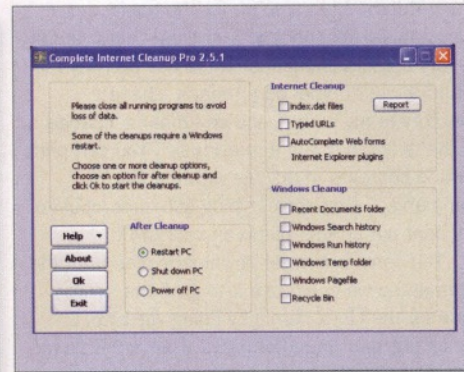
Arguably the best free firewall application out there. Use this to stop random attacks on your machine.
www.zonelabs.com



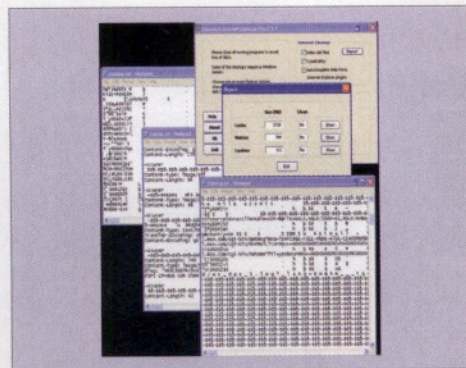
3 As with most apps, you'll be asked to specify a destination folder for the installation. Click on the **Browse** button to look through your computer files manually, or type the destination in straight off. The utility takes a tiny amount of space to install – just 1.3MB.



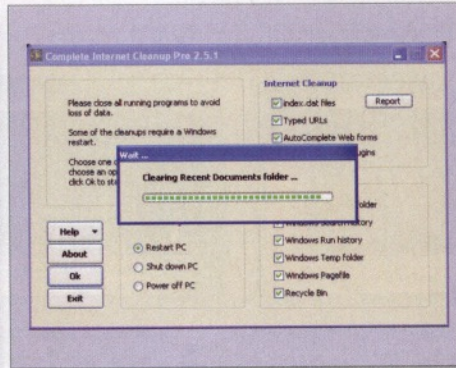
4 Once the wizard has completed its run, you'll see the screen above. The utility has installed correctly and successfully. From here, click the **Finish** button to launch *Complete Internet Cleanup Pro*, and an icon will automatically be placed on the desktop.



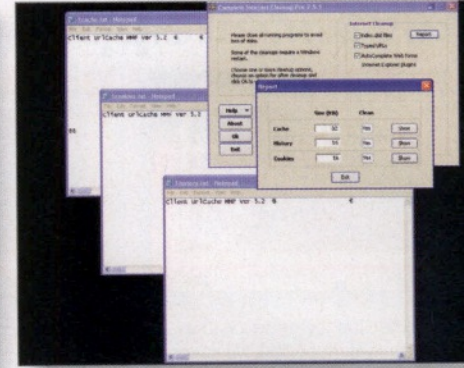
5 When open, you'll see three headed sectors in the main program box. Choose the options you want from Internet Cleanup, Windows Cleanup and After Cleanup. These decide what to look for and where, and what to do when it's finished cleaning. Click **OK** to run the program.



7 You can see if your cookies, history and cache have been cleaned, and how much space each file is taking up in your memory/hard drive. Click the **Show** button to display a Notepad document full of garbled internetese, some of which, such as URLs, is readable.



8 When you've finished looking at your cache, cookies and history files, you can return and prepare yourself to clean. Double-check the ticked options and, when ready, click the **OK** button. The app is very quick, and should briefly show a pop-up box, before restarting your PC.



9 After your computer has re-booted, you can launch the utility again and have a look at your new file sizes in the **Report** section of the app. As you can see above, the Notepad files have been cleared of gobbledygook and the files are labelled clean.

Mastering Linux

Paul Hudson pulls back the curtain on Linux's cryptic commands...

Although Linux experts will say that the command line is optional, they're lying. You see, the Linux command line is nothing like the castrated command prompt found in Windows – you can surf the web, read your emails, chat on IRC, and even play *Quake*. No, we're not kidding about *Quake* – Google up *ttyquake* to try it out.

The preferred command line tool is *Konsole*, which is under **System→Configuration**, on the K menu in SUSE Linux (on the disc last month). By default you start in your home directory, and the prompt will have your username, an @ symbol, your hostname, followed by ~:~>. The tilde (~) is the name of the current directory, and is a pseudonym for your 'home' – you can type a ~ by pressing **Shift+#**.

Like Windows' command prompt and DOS, Linux uses **cd** to change directories and the **dir** command to list contents. So, type **cd /usr/bin**, press **Return**, then type **dir** for the basic executables. You'll see lots of files – Linux is full of very useful commands. There are two ways to return to your home: **cd ~** means 'change directory to my home', and **cd -** means 'change to the directory I was in previously'. You can print out the contents of any file with the **cat** command. For example, typing **cat /proc/cpuinfo** will print out an info dump on your CPU.

The command **wget** downloads files from the internet, so we could use it to grab the source code for the Linux kernel by using **wget ftp.kernel.org/pub/linux/kernel/v2.6/linux-2.6.10.tar.bz2**. While that's downloading, you can try using **wget** to download an entire website: **wget -mirror -convert-links -p http://www.pcformat.com**. The parameters tell 'wget' that it should

download the entire site, rewriting links so you can browse it locally.

Once your kernel source has downloaded, unpack it with the command: **tar xjf linux-2.6.10.tar.bz2** – it may take a while to run. The 'x' means 'extract', the 'f' means 'the file that I specify', and the 'j' rather bizarrely means 'it's a .bz2 file'. Once that finishes, you can try **grep**, which

searches files for matching text. Type **cd linux-2.6.10** to change to the new directory, then type **grep -r XYZ ***. The '-r' means 'search recursively through all the subdirectories', and you will need to replace XYZ with a word of your choice – you'll be surprised Linux actually boots up when your search turns up some of the swearing the programmers leave behind about their work! **PCF**

"Linux is full of very useful commands"

ON THE DISC

If you've had enough of the command line and can't wait to get back to point-and-click land, look no further than your coverdisc this month...

Firefox

Powerful web browser that has all the features of Internet Explorer without all the bugs. www.getfirefox.com

Thunderbird

The email app to that goes alongside Firefox thrashes Outlook

Express for features and outright surfing speed. www.mozilla.com

Gaim

Chat with your friends on AIM, ICQ, MSN, Yahoo! and Jabber. <http://gaim.sourceforge.net>

OpenOffice.org

It's slow and struggles to beat MS Office 95 on features, but it's a free app, right? www.openoffice.org

Taking control of SUSE Pro

Conquering the command line is all part of using Linux

If you upgraded to **SUSE 9.2 Professional** (see last issue) there are tons more commands at your disposal – the **Personal** release only includes the essentials (or what **SUSE** believes to be the essentials). In **SUSE Pro**, the 'fortune' command outputs a random quote from its gigantic database of witty sayings. You also get **Nethack**, the classic role-playing game with a plot more complex than any ten Windows games you can name.

HINTS AND TIPS

Working with the command line means you get to put your typing skills to the test: can you type faster than you point and click? One useful function is **Tab Completion**, which lets you type the first few letters of a filename or command and, when you press **Tab**, completes it for you. If there are several filenames with a shared root, pressing **Tab** completes as much as it can, leaving you to add the character or two that differs and press **Tab** again.

You can also launch multiple command lines from the same *Konsole* window using the button the bottom left of the window.

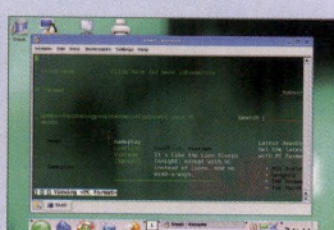
Advanced apps Four things to try if you want to go further...



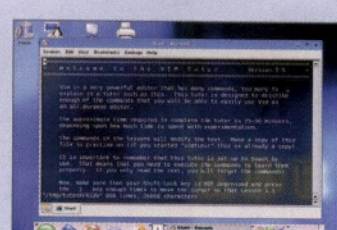
1 The 'top' command is the equivalent of Task Manager in Windows – it shows all the programs running at any point in time, along with current CPU and RAM usage. You can also kill a program by pressing **k** then typing its ID number (look in the PID field on the far left to find this).



2 You can use a program's output as another application's input with the | symbol (**Shift + **). For example, **ps aux | wc** lists all the programs being run, one per line, and **wc** counts words and lines, so **ps aux | wc** sends the number of programs running to any connected printer.



3 Stuck in text mode and want to sample the glittering delights of the web? Use **w3m someurl.com** to use **w3m**, the Linux text-based Internet client – it supports SSL, frames, tables, and other complex layouts. Use the cursor keys to navigate, **Return** to follow links, and **Q** to quit.



4 If you would prefer to edit text files directly from the command line, this is now possible thanks to **Vim**. It's a very powerful text editor that takes some time to master – fortunately there's also a **vimtutor** command that teaches you all you need to know to learn how to use it.

THE ESSENTIAL READ FOR ALL LINUX USERS

IN THE MARCH ISSUE:

- **FREE SOFTWARE** Experience the power of Linux on your Windows box
- **SUSE LINUX 9.2 PRO** Install the full version straight from the free DVD
- **INSTANT MESSAGING CLIENTS** We round up and rate the best chat apps
- **GIMP 2.2** Is this free graphics tool finally a match for Photoshop?
- **REMOTE CONTROL** Work from home – or the station, the pub, the beach...



ALSO ON THE DVD:

OpenOffice.org, Firefox, Cygwin, Scribus, Gimp 2.2, and all the files from our tutorials



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Back up your data

Chris Thornett **knows who to call for back-up**

Everyone remembers the first time it happens to them; the way the mouth suddenly goes dry as you realise your hard disk has gone to the data dump in the sky, and you've only got yourself to blame. We remember one sad episode involving a copy of Danz's *Retrospect*, an empty tape drive and a forgetful IT monkey, who soon had plenty of time for retrospection as his head bounced repeatedly off the office carpet. Acronis *True Image Deluxe* would definitely have come in handy.

Acronis *True Image Deluxe* isn't a complex back-up application, but it's definitely a potential life-saver. What it does do is capture a snapshot of your hard disk or partitions when it backs up, so you can restore everything painlessly. Alternatively, if you just want to safeguard important folders, try freeware like *Handy Backup 2.1* (on the disc or <http://backup.novosoft-us.com>) or *Cobain Backup 6* (on the disc or www.educ.umu.se/~cobain/cbu6.htm) and back up your important data online. **PCF**

Upgrade

Upgrade Acronis True Image Deluxe to version 8.0 – we've even wrangled a special discount: **£19.99 instead of £24.99.** To purchase, visit www.acronis.com/mag/pc-format-uk-tid

ON THE DISC

Acronis TrueImage Deluxe

If you're natural hoarder then this back-up tool will suit you, as it can make complete 'images' of your hard disks: OS and all.

www.acronis.com/mag/pc-format-uk-tid

7-Zip

Igor Pavlov's open source compression tool eats the commercial versions for, er, dessert. 7-Zip creates, updates and extracts the most popular archive formats. www.7-zip.org

Cobain Backup 6

Sort out automatic backups with this open source app for Windows 2000 and XP. It offers

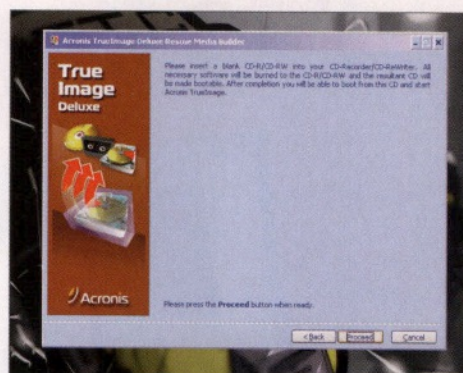
additional support for PKZIP compressions. www.educ.umu.se/~cobain/cbu6.htm

DeepBurner

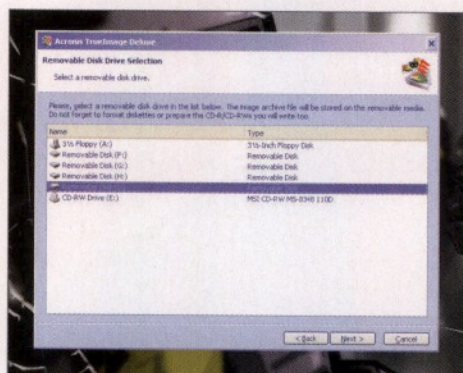
All your CD and DVD burning needs satisfied, even down to the labels, includes support for USB 2.0 and Firewire. www.deepburner.com

jGnash

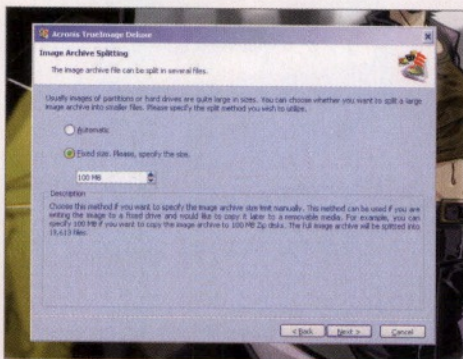
This is a flexible, Java-based personal finance package that takes a fresh approach at tracking account balances: not for fans of large dusty ledgers or reams of paperwork. <http://jgnash.sourceforge.net/news.php>



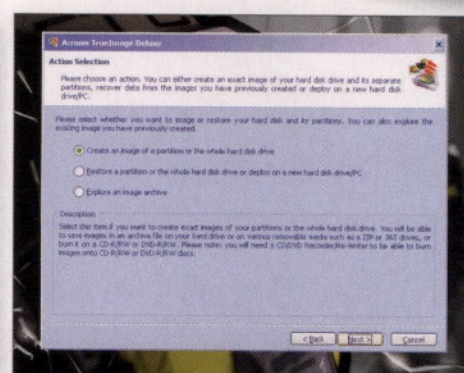
1 First, you must create a rescue boot disk on CD or floppy disks. Then you can boot up into Acronis' Recovery Manager and restore your hard disk, either from an image on an external drive or from True Image's 'Secure Zone' on your hard disk.



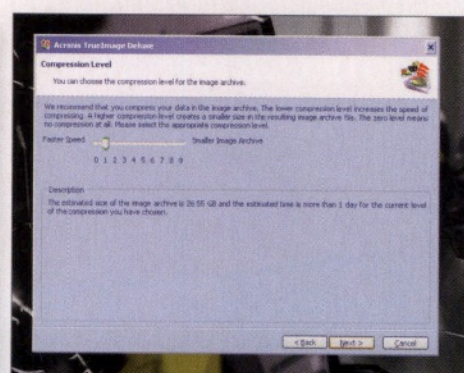
3 You can select from removable media, such as CD-/RW, Iomega ZIP or Jaz for backing up your disk images. Unlike some back-up software, you can save an image copy on the actual partition you're scanning and copy the image over to another storage device later.



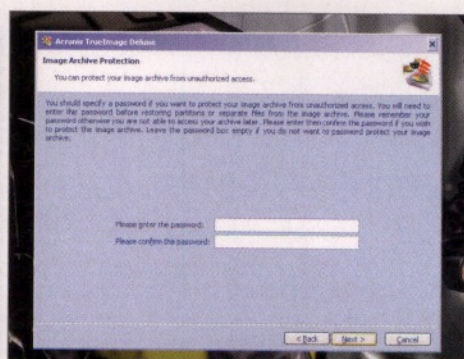
5 You can split the imaging process of a partition into smaller files by choosing 'fixed' and setting the file size to 700MB, in preparation for the transfer to CDs later, or you could set it to 2GB Jaz disk and try to find some at a local car boot sale.



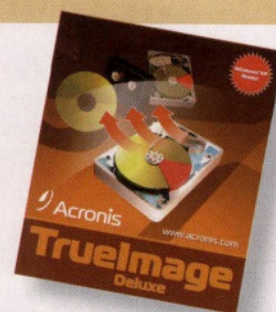
2 The *Deluxe* version enables you to restore your system from a previously saved image or mount image archives onto temporary logical drives to dig out individual folders. You have to create some images first, though, before you can restore anything.



4 Level 1 compression will halve the size of the final image and won't lengthen the process: 25GB will take around two hours. The imaging process runs in the background without sapping many of your system resources; just remember to leave your PC on.



6 Each disk image can be password protected and there's also the option to include comments, which you can use to label each image and keep your back up process organised, especially if you decide to upgrade to *True Image 8.0* with its facility to run scheduled back-ups.



Missed a Workshop?

Every month PCFormat brings you the best tutorials and software for your PC. Whether you want to know about audio, video, 3D modelling, photo editing, Linux, office apps or programming we've got it covered. If you missed a Workshop, you can order back issues.

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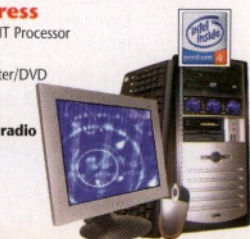
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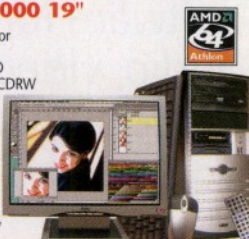
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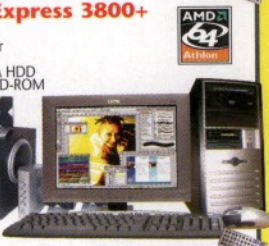
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- 5:1 Surround Sound Speakers

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- 128MB GeForce FX5200 Graphics
- PC-TV System with FM Radio and remote

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- Digital TV System and Digital radio
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Tiny Monster 2005 ATI

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Pub Quiz



Never try to drink and think

- 1** Which graphics card scores the most in 3DMark 2003?
a) Radeon X800 Pro
b) Radeon 9800 XT
c) GeForce 6800 GT
d) GeForce 6800 Ultra
- 2** What is the difference between the GeForce 6800 and X800 Pro in Doom 3?
a) Less than 10fps
b) 10-20fps
c) 20-30fps
d) More than 30fps
- 3** Which cards manage over 80fps in Far Cry, Cooler01 demo?
a) All of them
b) Just the GeForce cards
c) Just the 6800 Ultra
d) None of them
- 4** Which cards manage under 100fps in Call of Duty?
a) All of them
b) Just the Radeon cards
c) Just the 9800 XT
d) None of them
- 5** Which is the most expensive?
a) Radeon X800 Pro
b) Radeon 9800 XT
c) GeForce 6800 GT
d) GeForce 6800 Ultra

Answers on page 147

Free technical support

Got a problem with your PC? Write to Luis, or better still drop him an email. Assuming you can get your PC to work, that is...
pcfhelpline@futurenet.co.uk
PCF Helpline
30 Monmouth Street
Bath, BA1 2BW

Help is at hand

Skipping through the fields like a bad tempered Easter bunny, Luis Villazon distributes his abuse, advice and chocolate eggs



Keeping your keyboard and printer up-to-date will help prevent USB problems.

USB

Great keyboard

Q I have an up-to-date computer, Trust keyboard and a decent printer, yet I cannot use a USB memory stick on my computer (with USB ports at the front). It says "New device cannot be recognised". The memory stick works because I have tried on someone else's computer.

ROSY BENNETT

rosy_bennett@yahoo.co.uk

A I'm glad to see that your keyboard and printer are up to scratch because that would normally be the first thing I would check when troubleshooting unrecognised USB keys. You'd be amazed at the number of people who waste hours downloading proprietary device drivers or upgrading to a USB friendly OS like Windows XP trying to get their USB key to work. They sit there, doing things like futilely deleting the USB host controller in Device Manager to force Windows to reinstall the driver,

when clearly non-compatibility with their four-colour inkjet printer and keyboard is the obvious culprit.

RAM

Ask Adam

Q I have a problem and I want to 'ask Luis' but there doesn't seem to be an address specifically for him so...
My father has a Patriot PC (PBC400/D2) and I want to upgrade the memory. I don't know what type it takes or have a contact for the company who made it. Can you help me with either?

JOHN PAGE

johnpage@waldenclose.fsnet.co.uk

A To: Luis
From: Adam
Subject: redesign
I've just had to waste five minutes of my very busy editorial day forwarding you this message from one of our readers who says he couldn't find the Ask Luis address. Clearly we are not printing it big enough so I have decided to cut

your section to just two pages and run the email address as a double-page spread at the front.

To: Adam
From: Luis
Subject: Re: redesign
Fine, as long as my fee stays the same.

To: Luis
From: Adam
Subject: Re: Re: redesign
>Fine, as long as my fee stays the same.
Natch ;-)

To: Adam
From: Luis
Subject: Re: Re: Re: redesign
>>Fine, as long as my fee stays the same.
>Natch
In that case, why not just run www.crucial.com/uk on the other two pages. The memory selection wizard they have there is pretty handy and it seems to come up quite a lot in my postbag. If you need me, I'll be snoozing in my hammock for the rest of the day.

GRAPHICS CARDS

SCART input

Q I have just got a Windows Media Centre for Christmas, the Advent Media Center MC3030; only problem is this: I want to use it as a PVR and it wants to be one, but I have Homechoice (cable through your phone line) and thus only have a SCART-OUT from my TV top box, and the Advent only has an old style RF emulator socket in it (old style TV aerial). I could buy a SCART to RF converter for £50, but this is expensive and I will lose loads of quality won't I?

Can I buy a card for the PC that allows SCART-IN do you know? If so where and how much and any issues? It does not even have to be a TV tuner card, I assume, as my Home Choice box already does this. Or do you have any suggestions?

ALEX PROUD
alex@Proud.co.uk

A How exactly do you suppose that an RF converter is going to be cheaper or introduce less interference when plugged into the PCI bus than it would as a stand-alone box? It is still doing exactly the same job.

SCART connectors use separate pins for all the various audio and video signals. To fit all this information down a simple co-ax cable (which has just one signal line and one ground line, compared with 21 in SCART), the converter first discards all the stereo and widescreen video information. It then modulates what is left onto a carrier wave that corresponds to one of the standard TV channel

frequencies. Most of the quality drop comes from the discarded information but you inevitably introduce a bit of noise from the whole modulation and demodulation process. Of course, terrestrial TV is transmitted through the airwaves in modulated form and even if your Homechoice video arrives as digitised packets, it is probably converted from a modulated signal by the Homechoice people at the other end. So one demodulation step is unavoidable. But by using a SCART to RF converter, you'll be remodulating the signal and then demodulating it again. Hardly ideal.

The best solution then, from the point of view of quality, would be to replace your graphics card with one that sports an S-Video connector. Or add a separate TV tuner that does. Such as the Hauppauge WinTV PCI FM (£58, www.dabs.com), to pick one entirely at random. But I don't recommend you do this. Not because it is more expensive, but because it is a lot more complicated. Throw another PCI card into the mix, together with SCART to S-Video converter cables and I guarantee that there will be flies smeared all the way through that PVR ointment. That's just how the world is I'm afraid.

Trust me when I say that you will be much happier in the long run if you just put up with the (let's face it, fairly small) drop in quality and get a SCART to RF converter. You don't need to pay £50 for these – the Maplin VH89W is only £30. If that's still too much and you don't mind a bit of set-top clutter, you can modulate the signal perfectly well by plugging the SCART cable into your old VCR and then running the RF flylead from the VCR to your PC.

MODEMS

Slow dialup

Q My internet connection is much slower and a lot of sites won't open. I often open sites and they start loading but then they stop. I also can't open pictures. When I try, this box appears. I don't have anything dodgy on my PC and I don't have a virus program. I'm saving up for Norton but what can I do now? There is also one more problem. When I disconnect I can't connect again. I have to restart my PC. What is wrong?

RIKKU ERASMUS
puni_1@hotmail.com

A Well, gee, I don't know. I guess it would help if you had thought to tell me how much slower your connection is and whether it has ever worked properly and if so what has changed recently and how you connect and what "this box" is and, you know, anything at all about your specific problem.

You are an idiot then; that much is clear. But part of the fun of my job is to take letters written by idiots and try to wring enough clues from their illiterate whinings to offer some constructive advice. (To be sure, it's a very small part compared to the fun of roundly abusing all and sundry but it is a part, nonetheless.)

It sounds as if you are using a dial-up connection and Windows is displaying an error message or refusing to open sites with lots of multimedia content. This might be because you are using an old or incompatible browser or it might be because your modem driver is buggy. Unless the performance degradation to your internet connection has been recent, sudden and very pronounced, I'm inclined to think that you have simply slipped too far behind the times. You don't need to be on the cutting edge to browse the web, but you should at least be on the knife handle. Windows 98 with a generic 56K modem and Internet Explorer 4 isn't really enough these days.

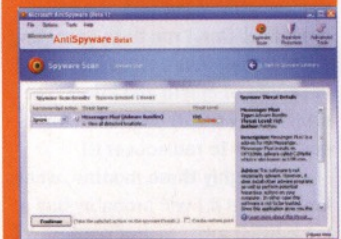
HARD DISKS

Disk transplant

Q Is it possible to use the hard drive from my recently deceased PC in my girlfriend's PC? I would like to run both HDs but I'm not too sure how. My old PC had a Fujitsu 20GB HD running Windows XP

FAQ

But who watches the watchers?
Meet Atlanta



What is it?

An anti-spyware program from Microsoft.

I thought they only code-named products after places in their home state of Washington?

Never mind that! This is a major development from a company that has traditionally avoided the entire arena of detecting malware on your PC.

Will it be bundled with Windows?

That isn't clear yet. Atlanta was released to MS employees as an internal beta test on 6th Jan this year. In the ordinary course of things, Microsoft would probably rather bundle it with XP or offer it as a download. Third-party anti-spyware vendors might challenge this in the courts as anti-competitive but Microsoft is in a slightly stronger position this time.

Why is that?

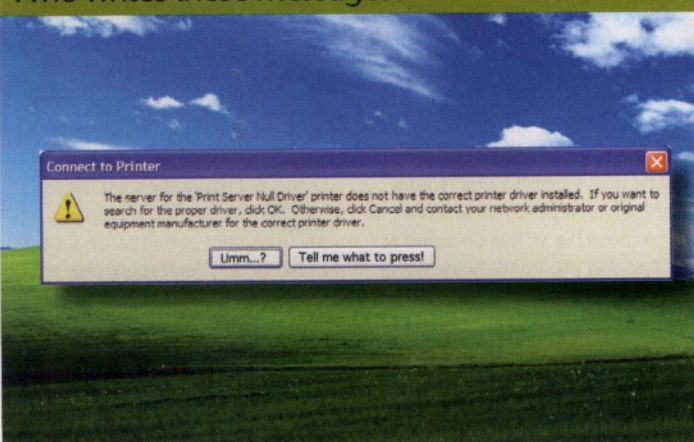
Because Atlanta is just a rebadged version of the largest commercial spyware scanner, Giant. By swallowing its largest competitor whole, Microsoft has ensured that the remaining players probably aren't big enough to challenge it in court.

Aren't there lots of freeware programs that do the same thing anyway?

There are and many would argue that for Microsoft to charge money for Atlanta would simply be allowing it to profit from security holes that it has introduced in Internet Explorer.

Fatal Exception Error

Who writes these messages?



Pro. The replacement is a Packard Bell Pentium III with a Fujitsu 9GB HD, I think. It's currently running Windows 98SE, which I hate. I don't want to wipe my girlfriend's drive to put XP on, because she has lots of files she doesn't want to lose. I tried to wire in my HD; set it as slave and adjusted the BIOS but when I boot up it gives a blank screen with some sort of error message. Can I run both operating systems or should I just give up? I have lots of music and important stuff on my 20GB disk and I am quite keen to rediscover it!

In roughly three months, when I can afford it I will probably buy a P4 2.8GHz system, but right now I have to try and make do with what I have in front of me.

TOM TAYLOR
tomjtaylor@hotmail.com

A Again with the vagueness! I'm not interested in "some sort of error message" – I want to know what it said. It's no good telling the doctor that you have had an X-ray but it just showed a bunch of bones. Specifics, that's what we need. Did your girlfriend's PC fail at the POST? Or when detecting your hard disk? Or when trying to start Windows? And come to that, what exactly did your PC die of? Moving the hard disk when it has already killed your PC is like using Elvis as a heart donor.

Using my Jedi troubleshooting powers, I am going to go entirely with my vague hunch and say that this could be a power problem. Your girlfriend's crappy Pentium III only just has enough power to spin up its own disk and can't cope with the extra drain of accelerating the

platters of a whole extra drive – even such a rubbishy one as yours. There isn't really any reason to suspect this diagnosis over any other but that's because you gave me precisely bupkuss to go on.

Alternatively, and to pass the time while you save up for your 'über' 2.8GHz machine, why not set your disk as master and the Win98 disk as slave? That will let you boot

give me the patience to answer your question exceeds the amount your PC will use in soft-off mode throughout its life and yours.

However, now that I have had that extra coffee, I suppose I might as well channel that caffeine somewhere useful. Your PSU is faulty. There we are, it's as simple as that. When you first switch it on, the voltage on one of the 5-volt

"It's no good telling the doctor that you had an X-ray but it just showed a bunch of bones"

to XP without any reinstalling or anything. Unless the problem is that power thing, in which case, this still won't work, of course.

POWER SUPPLY

Weird restarts

Q I have searched the net for quite a while now looking for an explanation to my problem, but to no avail. When I start up my PC, it does so for about two or three seconds and then it shuts down for about two or three seconds, only to restart again by itself and then it boots up normally and it works fine after that.

I have figured out that this only happens if the PC was switched off at the mains. In other words, if I start it up after it has been switched off at the mains, it gives me this problem. If I shut down the PC and don't unplug it at the mains, it does not give me this problem. It will start up first time every time until it has been switched off at the mains again.

EUGENE NIEUWOUDT.
slade@telkomsa.net

A What are you switching it off at the mains for then? Are you one of those oddballs that has to unplug every electrical device in the house before you can go to bed in case your house burns down in the night? My father-in-law does that and it drives me nuts. When his house burns down it will be because he left his cigar burning next to the gelignite, not because his VCR is on standby.

And don't come all "if everyone in the world unplugged their TV at night, you'd save enough electricity to decommission every nuclear power station" with me. The electricity it took to boil the water for the cup of coffee I needed to

signal lines is probably fluctuating excessively and the motherboard is misinterpreting this as a request to power down. It then bounces back up again as the voltage stabilises and after that it stays up. Simply shutting the PC down without unplugging the mains doesn't do this because the PSU is still connected. Solution → new PSU.

GRAPHICS CARDS

Which card?

Q I am currently building a new computer that uses the new PCI Express bus. I already have the motherboard (Abit AA8-DuraMax), Intel Pentium 4 775 CPU (3.0GHz), 512MB Corsair value select memory (which I will upgrade more when I get more cash) and an 80GB Maxtor SATA disk. All I need now is the graphics card. I want to get the best graphics card for my money both performance and over-clocking wise. I was thinking for going towards NVIDIA GeForce rather than ATI Radeon. So now I was thinking of a GeForce 6600GT. I don't know if that is a good choice or not and are there any better cards for about the same price range as the 6600GT? If I go for the 6600GT I have yet another two choices, what make I should go for, either Asus or Gainward.

MATTHEW
lauren@iafrica.com

A I'm not the best person to ask about graphics card performance for two reasons: 1. I don't really play enough of the sort of games that stress cards. 2. I generally have quite enough on my plate just getting everyone else's PCs to work at all without getting too hung up on all the whiners that just want their PCs

Paper Washers

Make insulating motherboard washers.



1 "I'm trying to find a UK site or shop that sells the little paper/fibre washers you use to isolate the motherboard from the case when installing the mobo," writes Simon Bloxham (simon.bloxham@ntlworld.com). Well, like toast, it isn't worth anyone selling them because they are so easy to make yourself.

2 And here's how. Take a sheet of thin card or thick paper and an ordinary hole punch. Make a bunch of holes in the sheet and then open up the punch to extract the perfect little circles held within.



3 Now you need to make a hole in the middle of each one. There are a couple of ways to do this. Probably the easiest is to put them on something firm but yielding (an old PCF magazine, say,) and stab them with a kebab skewer.

4 Your washer is now ready for use. If you need more thickness, simply stack a few together. You can also use plastic from a two-litre Coke bottle if you want more durable washers, but empty the bottle first as any excess drink will leak out.

to go faster. Call it triage, if you like. His PC won't even boot, yours gets a slightly lower frame rate than you'd hoped for; who am I going to help? [As often as not, *neither* – Ed].

What I can tell you however is that my PCI Express Radeon X600 Pro (from crucial.com) bitch-slaps PlanetSide like it's going out of style. If you need more detail than that, you're just going to have to keep reading until you hit the Buyers Guide section in a few more pages.

OS GLITCHES

Faulty driver

Q A check on Device Manager in Windows XP Home revealed an exclamation mark in System Devices beside Microsoft System Management BIOS driver. I went into properties and in Status it says "Windows cannot load the device driver for this hardware. The driver may be corrupted or missing (code 39)". I tried the trouble-shooter and connecting to the internet to update the driver but neither helped. I can't even find any help on the Microsoft website.

My computer appears to work fine so can you advise me what this driver or device does and how to repair it?

ROD HOWELL
rodney.howell@tiscali.co.uk

A As near as I can make out, it is a driver to allow XP to talk to the power management features of the BIOS. It is installed as part of SP2 but it might also be included with some of the patches from Windows Update. You shouldn't normally be aware of the driver but incomplete or corrupted SP2 installs can cause Device Manager to flag it. The best

way to fix this is to delete the entry in Device Manager, then reboot and reinstall SP2.

Some people have reported that their systems boot very slowly when this driver is damaged and reinstalling SP2 seems to get some of that speed back, though the general consensus is that SP2 boots more slowly than vanilla XP, which I suppose isn't that surprising. If it booted quicker, Microsoft would have charged for it and called it an upgrade, instead of a service pack.

USB

Speed stick

Q I have just bought a 1GB Sandisk memory stick but when I connect the device it says I have plugged a high-speed device into a non-high-speed USB hub. My PC has six USB hubs, four at the back and two in front. How will I know which is the high speed and which isn't? I have tried them all and get the same message every time.

TDP
tdp@sentechsa.com

A Semantics: a hub is collection of ports – you have six USB ports, not six hubs. The USB controller acts as a hub for all six ports.

Logics: if you get the same message on all the ports, it stands to reason that none of them are high-speed ports. There is nothing in the European Convention of Human Rights that guarantees you at least one USB2 port. If you are still not convinced, open Device Manager and look under "Universal Serial Bus Controllers". If you have USB2 ports, you'll see an entry for an Enhanced USB host controller in there somewhere.

Phlegmatics: USB2 devices are backward compatible with USB1.1 ports, they just run slower. You can still copy that gigabyte of flash RAM but it will take about ten minutes, compared with under 20 seconds over a USB2 port.

Economics: A PCI USB2 host controller card will cost you about £30. But you'll have to plug your memory stick in the back of your PC, unless you also get a USB hub.

NETWORKING

The old link

Q I have an old Pentium system, running Win98. On the other side I have a Windows XP system. Given a serial lap-link cable (doesn't that bring back memories?), is it possible to link the two systems to transfer files. If so, how?

JAMES LOMBARD.
jtlombard@yahoo.com

A It is possible (Network Connections→Network Tasks→Create a new connection→Set up an advanced connection→Connect directly to another computer and then specify COM1 or COM2) but please don't do it. Rule Number Two of networking is "never network on the cheap" and serial port networking doesn't just break this rule it disintegrates it.

Serial-port networking is the most effective way to annihilate a Saturday afternoon. It ought to work, it sounds like it will work, it looks like it is working. But then, somehow, it doesn't. And four hours later, you'll wonder if maybe you should have just taken the lid off the old system and moved the hard disk into the new one. Take a tip from that older, sadder but infinitely wiser, future-you and do it now. **PCF**

VIRUS OF THE MONTH

Digital germs to watch out for...

Christmas cards at Easter maybe a virus in disguise.



Name Erkez.D
Aliases Zafi.D
Type Worm
Infects Windows 2003/XP/2000/NT/ME/98/95
Number of outbreaks 50-1000
Virulence High
Lethality Medium
First detected 14 December 04

Symptoms

Erkez.D arrives in an email attachment that looks like it might be a Christmas card or holiday greeting in one of several European languages. When you try to open it you get a message "Error in packed file!" to disguise the fact that it doesn't appear to be doing anything. Meanwhile of course, the worm installs itself on your PC. While it is running, it will terminate any processes that look like anti-virus programs as well as regedit, msconfig and the task manager. It also opens a back door on TCP port 8181 to listen for commands from a remote hacker.

Prevention:

Do you really need to be told not to open Christmas cards in March?

Cure:

If you have a virus scanner installed you should update the virus definition database, restart Windows in Safe Mode and then run a full system scan. If you are running XP or ME, make sure you disable System Restore before you start or the worm can be preserved in old Restore Points that won't get backed up. Or download the removal tool from <http://tinyurl.com/yq2py>



Words Luis Villazon Pictures Mark Mitchell

20 things to try if...

hard disks are driving you mad

Worship the silver platters of data storage, the friend that stores all your dirty secrets



Diamond scores 10 on the Mohr hardness scale, Adam scores 7, Alec scores 2.

01

HARD ABUSE

We should report you for hard drive abuse, leaving these poor little tykes in a cramped, overheated box, neglecting them week after week, not giving them a second thought and then beating them with sticks. None of this is good. At the very least you should remember to run a disk defrag once a month, this not only improves performance but it'll let you know if there's any errors.

Picture © Corbis

02

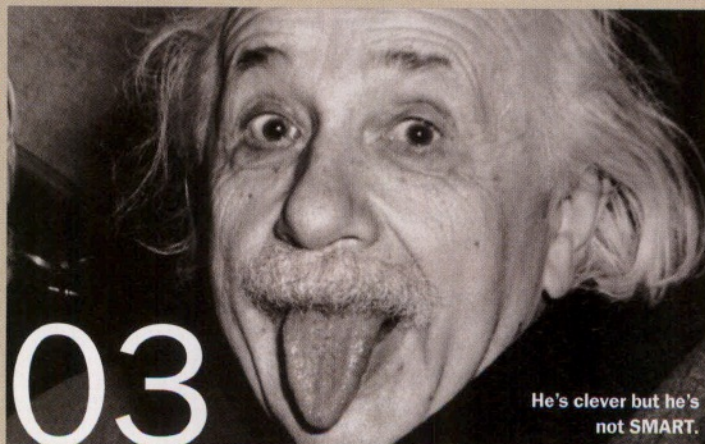
Console your drive

Use the Disk Management console to access this go to Start→Control Panel→Classic View→Administrative Tools→Computer Management

03

SMART man

Parallel ATA drives use a failure monitoring system called SMART, this tries to predict component failure by monitoring drive performance. As it's predictive it's not 100 per cent perfect but it's better than nothing. For it to work you'll need to enable support in the BIOS.



He's clever but he's not SMART.

Give you PC a health check every once in a while to keep it in tip-top shape.

04

Staying SMART

So how do you get SMART? Well we'd say some sort of study, reading books and generally avoiding as much of the normal TV scheduling as possible. Otherwise there are a number of tools that will check these details. A freeware one is *HDD Health*. www.panterasoft.com/index



05

SMALLER AND SMALLER

Partitioning your drives into smaller sections can seriously help protect against data loss. Do this on new drives or use a copy of *Partition Magic* for existing drives as it can shift data around saving you a lot of time.

06

Partition the world

Fortunately, Windows XP comes with its own partition and drive management program, the Disk Management console mentioned in tip two. Using this handy fella you'll be able to check all the drives currently attached to you machine as well as perform basic drive and partition operations. Just be careful with the old delete operation you crazy kids.

07

COME BACK!

Did you delete files you shouldn't have? While we could laugh at you, we won't, it happens to the best of us! Use this program to get files back www.snapfiles.com/get/restoration



Your motherboard is in there, somewhere.

08

OLDEN DAYS WERE RUBBISH

Everything was rubbish in the old days and anyone that says different is wrong, or old. There has always been limits on hard drive size, first old BIOSs could only handle measley 528MB drives, then there was a 8.4GB hardware limit and more recently an ATA limit of 138GB rose it's ugly head. However a 48-bit ATA specification was recently drawn up and cuts out most problems. However, if Windows XP can't see more than 138GB of drive, your motherboard is out of date and really needs to be updated, try a BIOS update.

09

Dodgy IDE cables

Be very careful with your IDE cables, crimping them and creating your own rounded cables can cause all kinds of transfer errors and greatly slow information transfer to and from your hard drive. Just be careful when you trying anything like this.

12

STINKING RAID

Having problems with your onboard RAID controller? First check the settings both in the motherboard BIOS as well as the additional BIOS of the controller itself. Read the onscreen messages to get the key strokes to adjust the RAID settings. Turn it off if you don't use it or switch to ATA/IDE mode if you don't use RAID.

14

The Removables

The good news is that removable and external drives, no matter what their connection, can be treated as standard hard drives when it comes to file recovery. As for connections, any USB problems tend to boil down to drivers – it's as simple as that. For removable media, always wait for any drive access to finish or else you're going to lose data.



15

DRIVING US MAD

If you want to install Windows XP and you're running a SATA drive over a VIA controller or anything that's not remotely Intel based you'll require the Serial ATA drivers for the controller on a floppy disc. When first running the Windows XP CD press F6 and have this disc ready.

16

Snapped away

Deleted a file off your digital camera? Don't worry these are stored using FAT32 and so can be rescued like any other files, just use the program we mentioned in tip seven.

10

NO SWAP FILE

You may have noticed there's a 'no paging file' option; we don't recommend you choose this, even if you have a large amount of memory. Programs will still request virtual memory and if it's not available it can cause more problems.

13

I'M A HOTTIE

Serial ATA drives are great; even if your PC is up and running you can just plug in your drive and it'll be detected and installed.



Hitting your hard drive with an axe is not advisable.

11

Swap shop

When we run out of memory we tend to write stuff down, when your PC runs out it writes stuff down on your hard drive. This area is the good old swap file or paging file. If its size isn't set high enough all sorts of performance problems and errors can start. To access the swap file controls right-click the My Computer → Properties → Advanced → Settings, and click the Change button in the Performance box.

17

EXPENSIVE EXPLOSIONS

BANG! If your drive blows up and it had something very, very important stored on it you might want to call OnTrack (www.ontrack.co.uk – 01372 744 422). The company specialises in tough data recovery.

18

DROPPING DRIVES

Don't do it! Drives are incredibly sensitive to movement especially when running. Turn your PC off if you're going to shift it around.



19

LET'S GET PHYSICAL

Physical or electrical drive problems can cause pauses when you first start your PC as the BIOS tries to detect your drive, also very slow operation within Windows usually along with a ticking noise is indicative of a surface error.

20

On a low level

If you think you've got a physical error then all hard drive manufacturers offer low level diagnosis and usually repair tools. Windows XP's own Error-check tool can try and fix and mark bad clusters but it can take forever to run. Try www.maxtor.com, as well as www.seagate.com/support and www.westerndigital.com for tools.

NEXT MONTH
PUNISH PRECOCIOUS PRINTERS



HP Deskjet 3745

£49
p153



Epson Stylus C66

£59
p153



Canon PIXMA

iP2000

£62
p154



HP Photosmart

7450

£74
p154



Epson Stylus C86
Photo Edition

£76
p155



Canon PIXMA

iP3000

£78
p155



Epson Stylus Photo

i200

£79
p156



Lexmark Z815

£79
p156



Canon PIXMA

iP4000

£112
p157



HP Photosmart

7760

£114
p157

Hot off the press

ses

Is one
printer
really all
you need?

Matthew Richards

takes you from the day-
to-day humdrum of mono
text printing to a full-colour
photo finish in seconds

People ask a lot of colour inkjet printers. You wouldn't expect a super-fast, road-hugging car to be able to take to the hills at the weekend for some heavy-duty off-road action. There's a world of difference between a Ferrari and a Land Rover Defender. When it comes to printers, however, we want everything from one box of tricks, whether it's text, bold and colourful DTP pages or full-on glossy photo output. The good news is that inkjet manufacturers are (mostly) up to the challenge.

So we set off to round up ten of the most versatile and desirable new colour inkjet printers on the market. On the face of it, they're all pretty much the same.

After all, each uses slightly different technologies to squirt ink onto sheets of paper but, under the bonnet, the differences can be a lot more noticeable.

HOT OR COLD?

Legend has it that inkjet printing was an accident at birth. A lab technician brushed the needle of a hypodermic syringe with the tip of a soldering iron. In the time it took to say "D'oh!" the immediate boiling and rapid firing of liquid from the syringe bore witness to the somewhat messy birth of the inkjet printing revolution.

Things have progressed a bit since then, especially in terms of resolution

and accuracy, and four main contenders fight it out for supremacy of the inkjet market. First up – alphabetically at least – is Canon, whose bubblejet technology uses a standalone ink head with a fine matrix of nozzles, each of which can be zapped individually with an electrical charge. As current flows, the nozzle gets hot enough to instantaneously boil the ink within and a tiny droplet is fired at the paper. The ink is supplied to the print head from separate cartridges that, in this case, are basically just tanks of ink. This has the potential for cheaper running costs, which we'll come to later. It's worth bearing in mind, though, that the 'low ink' warning is no idle threat. The ink also supplies liquid cooling to the print head so, if the ink actually runs out, the print head can overheat in seconds and be irreparably damaged.

Not only that, but it's also very expensive to replace.

HP and Lexmark both use a similar thermal inkjet process. Like Canon's, the system relies on boiling the ink to fire it at the paper but, apart from a couple of very businessy Officejet printers in HP's arsenal, all HP and Lexmark inkjets use ink cartridges with built-in print heads. The up side of this is that, unlike Canon and Epson print heads, there's no degradation in print quality over time as the print heads get worn out, because you get a spanking new print head with each and every new cartridge you buy.

have on the ink formulation, it can concentrate its efforts in other, more useful areas, like resistance to smudging and fading. The latest DURABrite inks are certainly impressive (in some areas) as you'll see in the reviews.

THINK OF A NUMBER

For general purpose printing, a mix of four colours (cyan, magenta, yellow and black) can recreate all the colours of the rainbow and plenty more besides. However, for top quality photo printing, conventional wisdom says that you need to add light cyan and light magenta to

"The nozzle gets hot enough to instantaneously boil the ink within and a droplet is fired at the paper"

The down side is that cartridges and running costs can be considerably more expensive, especially as the tri-colour cartridges don't have individually replaceable ink colours.

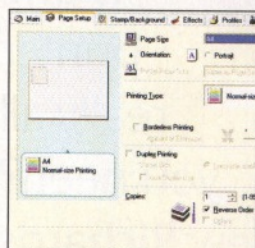
In a minority of one, Epson uses a piezo-electric crystal system in its print heads. These 'cool-running' heads don't boil the ink to fire it at the paper. Instead, the electric charge applied to individual nozzles cause them to contract extremely rapidly. It's this contraction that causes ink to be fired from the nozzle. Epson has always claimed that, because it doesn't have to worry about the detrimental effect that boiling could

the mix, to enable a wider 'colour space' or range of colours. The extended range is useful for the rendition of subtly graduated blue skies and flesh tones. The problem with using more ink colours is that printers can end up being much more expensive to run. Manufacturers have therefore made compromises in recent four-ink printers, lightening the cyan and magenta inks for good photo reproduction, while trying to avoid making colours look too washed out.

What's more interesting is the droplet size of the inks, which can be almost microscopically small (see the boxout below). Time to cut to the chase.

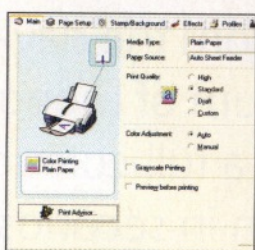
HOW WE TESTED

From fast text printing to top quality photo output, here's how we put the printers through their paces



Ease of use

Nobody wants to wrestle with a printer just to get words and pictures on a page. We tested them all for ease of use in terms of adjusting the paper trays for different sizes and types of paper, changing the ink cartridges and so on, as well as using the software drivers for various types of print jobs.



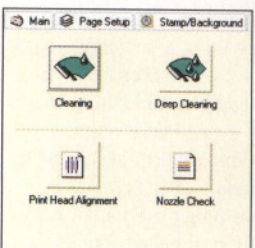
General purpose printing

The maximum speed of a printer, quoted in multi-page draft mode printing can bear little relation to real-world use. We timed the printers for outputting a single mono text A4 page in draft and normal quality settings, as well as for a normal quality colour mixed text and graphics A4 page, and compared the quality of the results.



Photo print speed

Switch to 'best' or 'photo' quality settings and an inkjet printer will often slow to a crawl. To test the actual speed of photo output, we recorded the time that each of the printers took to output a three megapixel photo onto a 4x6-inch glossy photo page. Then we repeated the exercise printing a full A4 glossy photo.



Print quality

Mono text was checked for clearly defined font edges, while colour DTP output was checked for sharpness as well as bold and uniform colour quality. For photo output, we used the manufacturers' own brand glossy photo papers and checked for colour accuracy, tonal range and overall image quality.

Little Drips

When it comes to ink droplets, the smaller the better

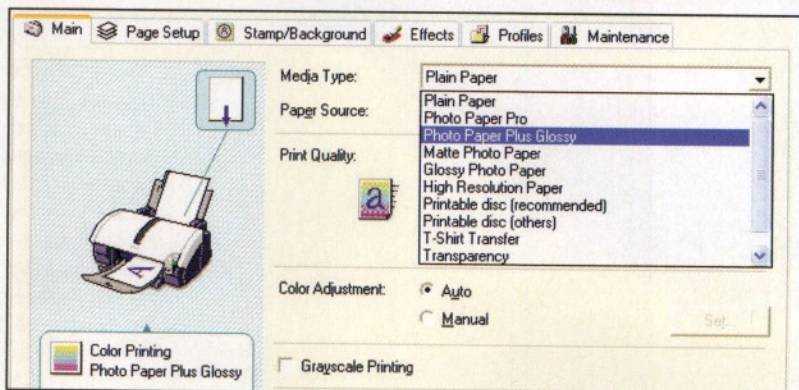
While a print resolution of just 300dpi is plenty for sharp font edges in text printing, photo quality demands the joining together of much smaller dots. To enable high-resolution printing, almost microscopically small droplets of ink are the order of the day. Each of the three Canon printers on test, for example, use Canon's FINE (Full-photolithography Inkjet Nozzle Engineering) system

for achieving tiny 2pl (picolitre) droplets of ink and a maximum print resolution of 4800x1200dpi. This means an ink droplet diameter of 10 microns.

Epson uses its own Variable-Sized Droplet Technology to control the size of the ink droplets fired at the paper. The general-purpose DURABrite Epson printers can achieve ink droplets as small as 4pl, while the Stylus Photo R200

shrinks this to just 3pl. In all cases, the Epson printers have a maximum print resolution of 5760x1440dpi.

Current Lexmark and HP inkjets boast the same maximum print resolution as the Canon printers on test – 4800x1200dpi. However, HP printers use the company's Photorec IV technology, which HP claims increases the 'blending' of inks to give less discernable grain in photo images.





HP Deskjet 3745

Price £49 **Web** www.hp.com/uk **Where to buy** www.dabs.com

For anyone wanting an ultra-compact printer to shoehorn into the corner of a cluttered desk, the diminutive Deskjet 3745 is a clear winner. However, while it excels in lack of physical size and the cheapness of its price tag, running costs might come as a shock, as we'll see later.

The HP churned out our mono text test page in a respectable 11 seconds, in a surprisingly usable draft mode, and normal quality output was even better in quality, taking just an extra five seconds to hit the output tray. Solid colour performance adds to crisp mono text output to make general purpose quality very good overall. Print speed is also quite nippy for such a budget printer, with only a minute being required for our colour mixed text and graphics DTP test page, printed from Microsoft Publisher.

Unlike most HP inkjets, the 3745 doesn't give you the facility to swap the mono cartridge for a 'photo' cartridge. Even so, the colour rendition in our tests was pretty good, although very light

DETAIL

Print technology Thermal inkjet
Number of inks Four
Number of cartridges Two (black and tri-colour)
Max print resolution 4800x1200dpi
Max claimed print speed (mono) 14ppm
Max claimed print speed (colour) 10ppm

BENCHMARKS

A4 mono text page (draft) 11s
A4 mono text page (normal) 16s
A4 colour DTP page (normal) 60s
4x6-inch colour photo (best) 2m 43s
A4 colour photo (best) 6m 55s

colours came out a little dark. Borderless 10x15cm prints are available by using HP's photo paper, which has a tear-off tab along one edge. This is ok but not as slick as using the borderless, edge-to-edge option on other printers, which does away with perforations.

The big problem with the HP is running costs. For example, the mono cartridge has less than half the ink

capacity of HP's more popular No 56 cartridge, used in the other two HP printers on test, but costs almost as much to buy. This makes the baby Deskjet expensive in the long run.

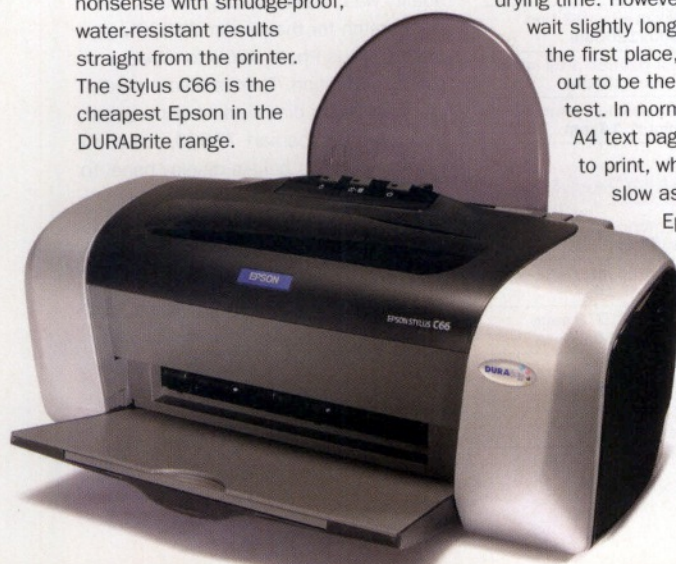
55% **PCF says...** "Cheap to buy but dear to run, the 3745's main attraction is its diminutive size."



Epson Stylus C66

Price £59 **Web** www.epson.co.uk **Where to buy** www.pcnextday.co.uk

One of the biggest irritations about inkjet printing is that if you get one drop of moisture, or a stray finger anywhere near the finished results, you end up with blotches and smudges all over the page. Epson's DURABrite inks aim to put an end to this nonsense with smudge-proof, water-resistant results straight from the printer. The Stylus C66 is the cheapest Epson in the DURABrite range.



Check out the C86 as well, if you fancy spending a few pounds more.

In our tests, results on plain and even recycled paper were excellent for general purpose printing. The ink lives up to its claims and you get really dry, smudge-proof prints with practically zero drying time. However, you do have to wait slightly longer for your pages in the first place, as the C66 turned out to be the slowest printer on test. In normal quality mode, our A4 text page took 24 seconds to print, which is almost as slow as the photo-oriented Epson R200. For all colour work, however, the C66 was very tardy indeed, with a colour mixed text and graphics page taking almost one and a half minutes to drop into the output tray.

DETAIL

Print technology Micro Piezo
Number of inks Four
Number of cartridges Four (CMYK)
Max print resolution 5760x1440dpi
Max claimed print speed (mono) 17ppm
Max claimed print speed (colour) 9ppm

BENCHMARKS

A4 mono text page (draft) 7s
A4 mono text page (normal) 24s
A4 colour DTP page (normal) 1m 28s
4x6-inch colour photo (best) 5m 30s
A4 colour photo (best) 13m 31s

In a word, the photo output of the C66 is disappointing. Even using Epson's own DURABrite photo paper, there's a distinct lack of gloss to photos and the colour rendition is only adequate for a four-ink printer. In best quality mode, photo printing is also monstrosously slow, taking well over 13 minutes to produce a complete A4 print.

In its favour though, the C66 uses separate ink tanks for black and all three colours, which is a concession to the cost of ownership and does help to keep running costs down. Even so, while colour costs are pretty average, black cartridges are expensive and mono printing works out to a slightly pricey 4.7p per page, based on the usual five per cent coverage. Overall, the C66 is a good general purpose printer but it's certainly not favourite for photo output.

62% **PCF says...** "A good budget option for every day printing but photo quality lets it down."



Canon PIXMA iP2000

Price £62 **Web** www.canon.co.uk **Where to buy** www.pixmania.com

The new Canon PIXMA iP2000 boasts impressive features at the price, including dual paper input trays and PictBridge support for direct printing from like-minded digital cameras. Like the more expensive Canon printers on test, paper handling is particularly good, with a plain paper tray stashed away out of sight, under the printer and a second paper tray of the more usual vertical variety at the back of the printer, ideal for slipping photo paper into as and when you need to.

In spite of the cheap price tag, the iP2000 is no slouch when it comes to general purpose printing. Our mono text page took ten seconds to output in normal quality mode and a colour DTP page took less than a minute. However, it's worth noting that the colour speed is still three times as slow as both of the other Canon printers here, which were blisteringly fast. The iP2000 is a good choice for general purpose printing.

The Canon is reasonably nippy for photo printing speed and the four-ink

DETAIL

Print technology
Bubblejet
Number of inks Four
Number of cartridges
Two (black and tri-colour)
Max print resolution
4800x1200dpi
Max claimed print speed
(mono) 20ppm
Max claimed print speed
(colour) 14ppm

BENCHMARKS

A4 mono text page
(draft) 7s
A4 mono text page
(normal) 10s
A4 colour DTP page
(normal) 59s
4x6-inch colour photo
(best) 2m 22s
A4 colour photo
(best) 5m 18s

process makes a decent job of colour rendition, especially for lighter colours like sky blues and flesh tones. However, vivid, darker colours and contrast were a bit lacking in our tests, compared with some of the other printers in the group. As with many inkjet printers at the budget end of the scale, the iP2000 has a sting in the tail when it comes to running costs. Unlike all but the cheapest Canon printers, there are no separate ink tanks for individual colours and you're stuck with just a tri-colour and black cartridge. The mono one is pricey, considering the ink capacity and the tri-colour cartridge demands that you throw two different

colour inks away every time you run out of the third. This aside, it's a good printer at this price.

88% **PCF says...** "Well designed all-round printer but running costs can be dear."



HP Photosmart 7450

Price £74 **Web** www.hp.com/uk **Where to buy** www.jessops.com

Built around HP's acclaimed 56, 57 and 58 cartridges, the Photosmart 7450 gives you the choice of four-ink or six-ink printing, by swapping the No 56 mono cartridge for a No 58 photo cartridge. This makes it ideally suited to both general purpose and photo printing.

We set up the printer with the optional 56 cartridge for our general purpose tests and performance was

pretty good. Things slow down dramatically for mono text and DTP printing if you have the photo cartridge installed. If speed is not the issue, though, the 7450 boasts fantastic text printing in both draft and quality modes, although for both this and colour work, pages can be quite wet when they leave the printer and need a little time to dry off. This aside, our test colour DTP pages were bright and bold and difficult to fault in any other respect.

DETAIL

Print technology
Bubblejet
Number of inks
Four or Six
Number of cartridges
Three (Tri-colour, Photo and optional mono)
Max print resolution
4800x1200dpi
Max claimed print speed
(mono) 18ppm
Max claimed print speed
(colour) 14ppm

BENCHMARKS

A4 mono text page
(draft) 9s
A4 mono text page
(normal) 14s
A4 colour DTP page
(normal) 50s
4x6-inch colour photo
(best) 2m 03s
A4 colour photo
(best) 5m 20s

Using the four-colour cartridge, the 7450 made a surprisingly good job of photo printing, especially on HP's Premium Plus Photo Paper, although pale colours were reproduced a little too darkly. Switching to the six-ink set up, colour range is much improved and photo quality was better, although it was still no a match for the Canon iP4000 or Epson Stylus Photo R200 for sheer glossy perfection. There's also a media card reader for direct photo printing but, unlike the Photosmart 77660, you can't use the printer's built-in display panel to preview photos.

The 7450 isn't cheap to run, but at an average of around 3.7p per mono page and 7.5p for colour, it's more cost effective than the cheaper Deskjet 3745 and you do have new print heads with every cartridge, which should maintain

76% **PCF says...** "Good value, with four and six-ink printing options, plus a built-in card reader."





Epson Stylus C86 Photo

Price £76 **Web** www.epson.co.uk **Where to buy** www.shop.bt.com

Strangely for a printer that's described as part of Epson's 'general purpose' range rather than its photo printer family, this Stylus C86 has a 'Photo Edition' suffix in its title. However, it still uses the same four DURABrite inks as the C66, which we found to be somewhat second best for photo printing over the course of these tests. As it turns out, the Photo Edition tag refers to the fact that you get a multi-format media card reader but, unlike two of the HP printers on test, this is only a standalone USB device rather than being built into the printer and therefore doesn't give the possibility of standalone photo printing.

Noticeably faster in our tests for mono text printing than the Epson C66, the more expensive C86 actually turned out to be slightly slower for colour DTP printing, in spite of claims in the spec list that it should be 2ppm faster. At least the quality is worth waiting for, with rich colour and crisp black text produced by ink that's practically dry even as it

DETAIL

Print technology
Micro Piezo
Number of inks Four
Number of cartridges
Four (CMYK)
Max print resolution
5760x1440dpi
Max claimed print speed
(mono) 22ppm
Max claimed print speed
(colour) 12ppm

BENCHMARKS

A4 mono text page
(draft) 4s
A4 mono text page
(normal) 12s
A4 colour DTP page
(normal) 1m 03s
4x6-inch colour photo
(best) 3m 50s
A4 colour photo
(best) 9m 22s

hits the paper, let alone by the time it reaches the output tray.

As with the C66, the DURABrite inks are lacklustre for photo output. What they gain in smudge resistance, they lose in sheen and gloss, while colours are slightly muddy.

The C86 uses an identical colour cartridge line-up as the C66, with individual Epson T0442/3/4 ink tanks for cyan, magenta and yellow. However, the black cartridge has a higher capacity, promising a whopping 950 mono pages, at the usual five per cent coverage per A4 sheet. This makes it much cheaper to run and you should soon be able to claw back the extra initial outlay and

break into profit. It's a good choice for general purpose printing, if you're not that fussed about photo quality.

70% **PCF says...** "Reasonable costs and reliable inks make this a good buy for general output."



Canon PIXMA iP3000

Price £78 **Web** www.canon.co.uk **Where to buy** www.amazon.co.uk

One step up Canon's ladder from the iP2000, the new iP3000 adds plenty of speed while reducing running costs, making it a much better buy. For day-to-day printing, output doesn't have the smudge-proof benefits offered by Epson's DURABrite inks but, with dual paper trays and PictBridge support, the iP3000 is very easy to live with.

Like the older Canon i560 and i850 printers, the

iP3000 uses a pigment-based ink for black output (BCI-3 cartridge) and dye-based cyan, magenta and yellow inks from Canon's BCI-6 cartridge range. As such, you get good, solid black performance for text printing although dark colours, like navy blue hypertext links, can look pale on paper. In our tests, speed was stunning, with just nine seconds needed for a

normal quality mono text page and only 21 seconds for a full colour A4 DTP page.

Indeed, the iP3000 can become a victim of its own success in multi-page printing, with sheets leaping into the output tray before previous ones have had a chance to dry. Fortunately, there's a setting in

DETAIL

Print technology
Bubblejet
Number of inks Four
Number of cartridges
Four (CMYK)
Max print resolution
4800x1200dpi
Max claimed print speed
(mono) 22ppm
Max claimed print speed
(colour) 15ppm

BENCHMARKS

A4 mono text page
(draft) 6s
A4 mono text page
(normal) 9s
A4 colour DTP page
(normal) 21s
4x6-inch colour photo
(best) 1m 01s
A4 colour photo (best)
2m 19s

the printer driver to hold back on multi-page print speed to cure this.

Just as with slightly insipid reproduction of bold colours in DTP work, the iP3000 suffers the same problem with photo output. Unlike many four-ink printers, the Canon makes a great job of very light colours but the trade-off is that dark colours can look slightly washed out. We experienced the same problem with dark greys and black in photos, which is where the ContrastPLUS system on the significantly more expensive iP4000 pays dividends.

With separate tanks for each ink, the iP3000 is very cost effective for colour printing and it's even better for mono, with a page cost of just 2.5p. If you can live without absolute colour accuracy, the iP3000 has a great deal to offer, especially in the long term.

74% **PCF says...** "Great speed and cheap running costs, but colour reproduction's not the best."





Epson Stylus Photo R200

Price £79 **Web** www.epson.co.uk **Where to buy** www.dixons.co.uk



The quality of budget digital cameras has advanced massively over the last couple of years and, if you're after a printer that can provide equally high quality in photo output, with a similarly budget-conscious price tag, the R200 is for you. Unlike all the other printers in the group, the Epson uses a full-time, six-ink system, tailored to give you the best possible colour rendition for photo printing.

The trade-off you have to accept when you buy a device which specialises in photo printing is that mono and general purpose printing tends to be slow. Sure enough, the R200's mono output is slightly on the grey side, rather than rich black, but font edges are well defined and pages are perfectly readable. There's no denying it's a bit on the slow side, taking 27 seconds to print our A4 mono text page in normal quality mode but it's surprisingly cheap to run in mono, working out at just 2p per page. It's also surprisingly fast for colour DTP work, beating most of the 'general

DETAIL

Print technology	Micro Piezo
Number of inks	Six
Number of cartridges	Six (CMYK, PC, PM)
Max print resolution	5760x1440dpi
Max claimed print speed (mono)	15ppm
Max claimed print speed (colour)	15ppm

BENCHMARKS

A4 mono text page (draft)	6s
A4 mono text page (normal)	27s
A4 colour DTP page (normal)	37s
4x6-inch colour photo (best)	1m 44s
A4 colour photo (best)	3m 48s

purpose' printers in the group by a significant margin.

As you'd expect, photo printing is what the R200 does best, and using Epson's own glossy photo paper our test results were superb. The printer managed to recreate both bold, vivid colours and flesh tones in photos. Having said that, however, results were only marginally better than from Canon's iP4000 printer, which is also faster.

While the running costs of 2p per mono print are cheap, colour printing works out more expensive, at around 10p per A4 page. In practice, however, the fact that all six ink cartridges are individually replaceable should save you money

on ink you don't throw away, compared with printers like the Canon iP2000, Lexmark and all the HP printers.

85% **PCF says...** "Buy this for top photo quality on a tight budget. An excellent all-rounder."



Lexmark Z815

Price £79 **Web** www.lexmark.co.uk **Where to buy** www.cec.co.uk

There's always a printer that has to come bottom of every inkjet group test and this time it's a Lexmark. While the company has a long tradition of producing high-quality laser printers, the Z815 just isn't competitive with the inkjets here. In spite of offering HP-like four-ink and six-ink printing options through

various cartridge choices, the Lexmark faced some stiff competition in this test, and at this price, we were disappointed with it.

Mono text printing certainly has crisp quality using the four-ink cartridge line-up but, in our tests, an A4 page took almost twice as long to produce as on the Canon iP3000. A colour DTP page took three times as long to output as on the similarly priced Canon, making it a bit of a slow runner, even though the colour quality was pretty good.

Another annoyance is the talking printer driver, that tells you when each print job is started and when it's finished, although you can switch this feature off.

Like the Lexmark P6250 all-in-one printer that we reviewed a couple of months ago, photo quality is lacklustre and prints seem to take a long

DETAIL

Print technology	Thermal inkjet
Number of inks	Four or six
Number of cartridges	Three (Mono, tri-colour and optional Photo)
Max print resolution	4800x1200dpi
Max claimed print speed (mono)	20ppm
Max claimed print speed (colour)	14ppm

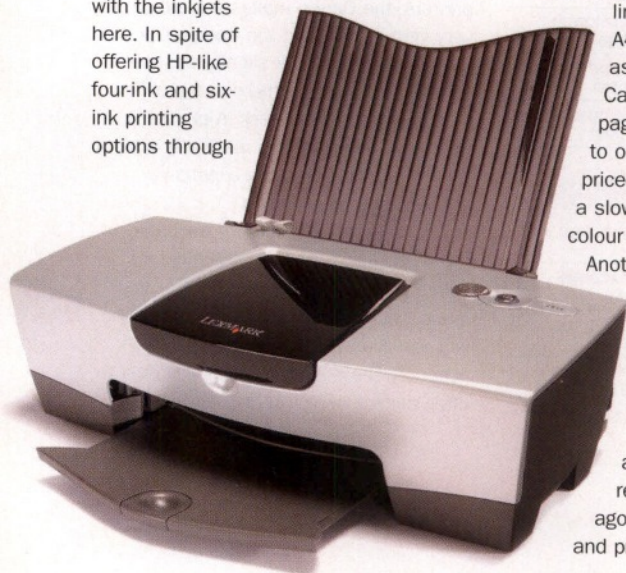
BENCHMARKS

A4 mono text page (draft)	12s
A4 mono text page (normal)	16s
A4 colour DTP page (normal)	1m 02s
4x6-inch colour photo (best)	2m 07s
A4 colour photo (best)	6m 44s

time to dry, compared with all of the other printers on test. Colour accuracy was also quite poor using the standard four-ink cartridge line-up, although output improves noticeably if you switch the mono ink reservoir for the optional photo printing cartridge.

Colour costs are only slightly higher than average on the Lexmark but mono printing turns out to be horribly expensive, at 7.5p per page. This means that mono printing is three times as expensive – thanks to the cost of the ink – when compared with the Canon iP3000 and iP4000 printers, and also gives the Lexmark the dubious honour of being the most expensive printer to run in the group. As with the HP printers, you do get a new print head with each and every cartridge you buy but that's not really enough to justify this price point.

42% **PCF says...** "Pricey to buy and expensive to run, the Lexmark's just too expensive."





Canon PIXMA iP4000

Price £112 **Web** www.canon.co.uk **Where to buy** www.dabs.com



Finished with Canon's typically good eye for design and excellent build quality, the beauty of the iP4000 is much more than just skin deep. Along with the dual paper trays and PictBridge support offered by the other two Canon printers in the group, this one features an innovative five-ink printing system, first introduced on the Canon i865. Employing Canon's ContrastPLUS system, the printer uses separate dye-based ink tanks for Cyan, Magenta, Yellow and 'Photo Black' as well as a pigment-based black ink tank for more workaday printing. For our money, the combination is a real winner.

Fabulously fast for general purpose printing, the iP4000 completed out A4 mono text page in just eight seconds, using the normal quality setting, and polished off a colour DTP page in a mere 20 seconds. The quality was excellent in both cases, making you wonder why some other printers need to take so long to get about their business.

DETAIL

Print technology	Bubblejet
Number of inks	Five
Number of cartridges	Five (Dye-based CMYK and pigment black)
Max print resolution	4800x1200dpi
Max claimed print speed (mono)	25ppm
Max claimed print speed (colour)	17ppm

BENCHMARKS

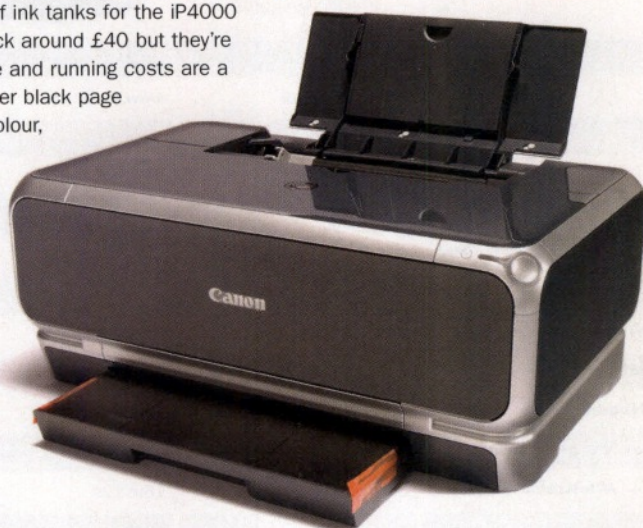
A4 mono text page (draft)	5s
A4 mono text page (normal)	8s
A4 colour DTP page (normal)	20s
4x6-inch colour photo (best)	58s
A4 colour photo (best)	2m 17s

In theory, the photo quality of Canon's five-ink printer shouldn't be a match for the full-on six-colour systems offered by the Epson R200 and HP Photosmart printers. In practice, the iP4000 more than matched the HP printers for photo output, churning out stunning prints at a faster rate than anything else here.

A full set of ink tanks for the iP4000 will set you back around £40 but they're all replaceable and running costs are a modest 2.5p per black page and 7.5p for colour, based on five per cent ink coverage per A4 page. There's also a handy duplex facility so you can print on both sides of the paper and cut your running costs even

further. All in all, if you want a single printer for all your general purpose and photo printing needs, make it this one.

95% **PCF says...** "Fast, accurate and cheap to run, the iP4000 is brilliant at everything."



HP Photosmart 7760

Price £114 **Web** www.hp.com/uk **Where to buy** www.simply.co.uk



The Photosmart 7760 is the most expensive printer to buy in this test, but offers a wealth of features for the money. As well as HP's typical four-ink and six-ink printing options, you get some real bonuses in terms of photo printing.

Workaday printing is almost a waste of the Photosmart's talents, although it accomplishes mono and colour text and graphics printing very well, once you've fitted the optional No 56 black cartridge. However, while quality is very good, it's

not the fastest printer on the block for general office output.

The 7760 really gets into its stride for photo printing. As well as having a multi-format card reader built in, which can read just about any card you care to throw at it, there's also a colour LCD screen. You can use this for previewing photos stored on memory cards, making the Photosmart ideal for standalone photo printing. Better still, a wide range of control buttons enables you to zoom, rotate or crop your photos before

printing, or even to enhance images using colour effects or adding picture frames. In our tests, outright photo quality still wasn't quite as good as that

DETAIL

Print technology	Thermal inkjet
Number of inks	Four or six
Number of cartridges	Three (Tri-colour, Photo and optional Black)
Max print resolution	4800x1200dpi
Max claimed print speed (mono)	21ppm
Max claimed print speed (colour)	16ppm

BENCHMARKS

A4 mono text page (draft)	9s
A4 mono text page (normal)	14s
A4 colour DTP page (normal)	48s
4x6-inch colour photo (best)	1m 56s
A4 colour photo (best)	5m 08s

of the Epson R200 or Canon iP4000, in terms of colour accuracy or tonal separation, but it was very close. To be hyper-critical, the gloss finish of prints on HP paper also seemed to be slightly uneven, compared with results from Canon and Epson, with darker colours appearing to be slightly less reflective than lighter hues.

The 7760 uses identical ink cartridges to the cheaper Photosmart 7450 (which is also on test here) and has exactly the same running costs. However, it's supremely useful as a standalone printer and the initial outlay is very reasonable considering the built in media card reader and colour LCD screen. This makes the replacement cartridge prices relatively easy to live with, unless you're into really high volume printing.

80% **PCF says...** "A superb photo printer, the 7760 is also good for general purpose printing."



SPECIFICATIONS AND PERFORMANCE

All the vital stuff, right here in one handy table

£49
HP Deskjet
3745

55%



£59
Epson Stylus
C66

62%



£62
Canon iP2000

88%



£74
HP Photosmart
7450

76%



£76
Epson Stylus
C86 Photo

70%



Phone	0845 270 4222	0870 241 6900	0800 616 417	0845 270 4222	0870 241 6900
Web	www.hp.com/uk	www.epson.co.uk	www.canon.co.uk	www.hp.com/uk	www.epson.co.uk
Technology	Thermal Inkjet	Micro Piezo	Bubble Jet	Thermal Inkjet	Micro Piezo
Resolution (dpi)	4800 x 1200dpi	5760 x 1440dpi	4800 x 1200dpi	4800 x 1200	5760 x 1440dpi
Number of inks (inc black)	4	4	4	6 or 4	4
Number of cartridges	2	4	2	2 (plus optional black)	4
Nominal max speed (colour)	10ppm	9ppm	14ppm	14ppm	12ppm
A4 mono text test speed (draft)	11s	7s	7s	9s (bk cart)	4s
A4 mono text test speed (norm)	16s	24s	10s	14s (bk cart)	12s
A4 colour DTP test speed (norm)	60s	1m 28s	59s	50s (bk cart)	1m 03s
4x6 test photo speed (best)	2m 43s	5m 30s	2m 22s	2m 03s	3m 50s
A4 test photo speed (best)	8m 20s	16m 12s	6m 21s	6m 24s	11m 14s
Mono cartridge price	14.1	18.8	7.05	16.45	25.85
Colour cartridge price	16.45	3 x £10.57	11.75	57, £29.37 (58, £21.15)	3 x £10.57
Mono cart life (5% coverage)	220 pages	400 pages	140 pages	450 pages	950 pages
Col cart life (5% coverage)	190 pages	450 pages	170 pages	390 pages	450 pages
Estimated number of 4x6 prints	80 prints	125 prints	55 prints	125 prints	145 prints
Cost/mono pg (5% coverage)	6.4p	4.7p	5.0p	3.7p	2.7p
Cost/col pg (5% coverage)	8.7p	7.0p	6.9p	7.5p	7.0p
Approx cost per 4x6 photo	47p	40p	34p	39p	40p
Approx cost per 8x10 photo	£1.55	£1.20	£1.15	£1.29	£1.20
PictBridge	No	No	Yes	No	No
Card reader	No	No	No	Yes	Yes
Borderless printing	4x6	4x6	4x6, 5x7, A4	4x6, A4	4x6, 5x7, A4
Noise level	45 dBA	42 dBA	43 dBA	45 dBA	42 dBA
Dimensions (w x d x h) (mm)	422 x 182 x 142	460 x 242 x 193mm	418 x 260 x 169	475 x 220 x 155	460 x 242 x 191

PCF Verdict

What's the best inkjet printer for your needs?

To get the most from your printer, you must work out what you're going to use it for before making a purchase. If most of your printing is mono, you're best off with a four-ink printer that provides crisp plain text and solid colour output. The Canon iP3000 is a great choice for sheer speed of output and the running costs are quite low as well. However, colours can

tend to look a bit wishy-washy so we prefer the Epson Stylus C86. This produces bold, sharply-defined font edges and good colours for general purpose printing, and has the added advantage that its DURABrite inks are dry pretty much as soon as they hit the page, and give amazingly smudge-resistant results on plain or even recycled paper. The only drawback is that

DURABrite inks tend to make for comparatively murky photo prints.

A really neat all-rounder, which can turn its hand to four-ink or six-ink printing is the HP Photosmart 7450, and it's also very good value at the price. If you spend an extra £40, the Photosmart 7760 is faster and has an added

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Bubble Jet	Micro Piezo	Thermal Inkjet	Bubble Jet	Thermal Inkjet	Technology
4800 x 1200dpi	5760 x 1440dpi	4800 x 1200dpi	4800 x 1200dpi	4800 x 1200	Resolution (dpi)
4	6	4 or 6	5	6 or 4	Number of inks (inc black)
4	6	2 (plus optional photo)	5	2 (plus optional black)	Number of cartridges
15ppm	15ppm	14ppm	17ppm	16ppm	Nominal max speed (colour)
6s	6s	12s (bk cart)	5s	9s (bk cart)	A4 mono text test speed (draft)
9s	27s	16s (bk cart)	8s	14s (bk cart)	A4 mono text test speed (norm)
21s	37s	1m 02s (bk cart)	20s	48s (bk cart)	A4 colour DTP test speed (norm)
1m 01s	1m 44s	2m 07s	58s	1m 56s	4x6 test photo speed (best)
3m 07s	4m 34s	8m 05s	2m 44s	6m 10s	A4 test photo speed (best)
8.22	9.4	14.99	8.22	16.45	Mono cartridge price
3 x £8.22	5 x £9.40	33, £15.99 (31, £17.99)	4 x £8.22	57, £29.37 (58, £21.15)	Colour cartridge price
330 pages	477 pages	200 pages	330 pages	450 pages	Mono cart life (5% coverage)
460 pages	472 pages	190 pages	430 pages	390 pages	Col cart life (5% coverage)
120 prints	150 prints	100 prints	115 prints	125 prints	Estimated number of 4x6 prints
2.5p	2.0p	7.5p	2.5p	3.7p	Cost/mono pg (5% coverage)
5.4p	10.0p	8.4p	7.5p	7.5p	Cost/col pg (5% coverage)
28p	38p	34p	29p	39p	Approx cost per 4x6 photo
92p	£1.25	£1.11	95p	£1.29	Approx cost per 8x10 photo
Yes	Yes	No	Yes	No	PictBridge
No	No	No	No	Yes	Card reader
4x6, 5x7, A4	4x6, 5x7, A4	4x6, A4	4x6, 5x7, A4	4x6, A4	Borderless printing
35 dBA	42 dBA	48 dBA	35 dBA	45 dBA	Noise level
418 x 286 x 170	462 x 263 x 196	440 x 230 x 152	418 x 286 x 170	452 x 176 x 374	Dimensions (w x d x h) (mm)

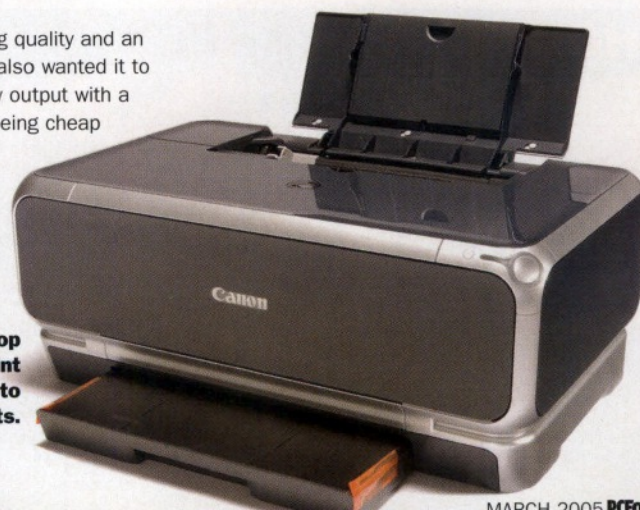
extra in the shape of a colour LCD screen, which makes the most of its built-in card reader for photo printing. However, neither of these HP printers are the best for outright photo quality so, if that's what you're after, and you don't mind sacrificing mono print speed, the Epson Stylus Photo R200 is an absolute bargain at the price.

The HP Deskjet 3745, Canon iP200 and Epson Stylus C66 all lose out because of their high running costs. Another printer that's expensive to run is the Lexmark Z815, but it's also quite costly to buy, so it stands little chance of winning the test.

From the start, we've really been looking for a single printer that offers great mono and

colour, general purpose printing quality and an impressive turn of speed. We also wanted it to produce stunning photo quality output with a minimum of smudging, while being cheap to run and easy to use. That sums up the Canon PIXMA iP4000 in a nutshell. It's a fabulous piece of kit and a worthy winner of this month's supertest. **PCF**

The Canon iP4000 is a top performer for every print job, from mono text to glossy photo prints.



PCFormat BUYERS' GUIDES

Our definitive guide to the finest kit you should be spending your hard earned money on

- p160 Monitors
- p161 Graphics cards
- p161 DVD burners
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TOP 10 Monitors

The most important peripheral there is. Choose well, friend

CPUs and video cards come and go, but a high quality monitor will give years of useful service. In fact, nothing will improve your computing experience more than a decent screen. So don't skimp, and don't leave deciding which model to

choose until last. Take your time and what's more, don't accept the trash screens many vendors try and fob you off with as part of PC bundles. Often these are cost-saving exercises on their part – don't make the same mistake.

5 High-end LCDs

Large, lovely screens for those with ludicrous amounts of lucre



1

VP191s £378

ViewSonic >>www.viewsonic.com

Now at a reasonable price, this is the 19-inch panel we'd go for. Stand-out features include the slim bezel design, infinitely adjustable chassis and fabulous colour balance. Only average for gaming.

PCF158 91%



2

Flatron L2010P £650

LG >>www.lge.com

Probably the best monitor we have ever tested, but – cripes – look at that price. The 1600x1200 native resolution and 20-inch screen diagonal give massive desktop real-estate.

PCF158 90%



3

UltraSharp2005FPW £495

Dell >>www.dell.co.uk

In many ways, this 12ms display is what we've been waiting for. The price, on the other hand, isn't. However, excellent viewing angles, contrast and brightness make it, in many ways, an excellent choice.

PCF172 89%



4

SDM-HS94PS £549

Sony >>www.sonystyle.co.uk

The only thing holding the Sony back from a PCF Gold award is the price. It looks fantastic, while the panel is wonderfully clear and crisp. It's also very attractive; even the rear has a slide-on panel.

PCF169 89%



5

VP231WB £1,379

ViewSonic >>www.viewsonic.co.uk

A sleek design with so much desktop real estate it's ludicrous. Not nearly as ludicrous as the price, though. A top display that requires a huge financial sacrifice.

PCF169 84%

5 Affordable LCDs

Modest but meritorious monitors for those with moderate means



1

L17PS £185

VideoSeven >>www.videoseven.com

At this price, we expected this bargain panel to suck mightily. It proved us all wrong by winning issue 169's supertest. Not a perfect display but by jingo, it's cheap.

PCF169 90%



2

CTX F773(L) £293

CTX >>www.ctxeurope.com

Unmissable multimedia image quality for reasonable money, with striking styling making it a must-have from CTX. The image quality from its wet-look LCD panel is superb.

PCF169 86%



3

TL966B £285

Relisys >>www.relisys.co.uk

Don't be fooled by the bargain basement pricing, plain-Jane styling and 25ms quoted pixel response times. This is a decent gaming and multimedia panel. Vivid and bright.

PCF158 91%



4

1760NX £250

NEC >>www.nec.com

So similar to the Sony, they could have been separated at birth; NEC's 17-inch is the cheaper of the two and the better buy. Nearly matches Sony's finest in all areas including nippy 16ms response.

PCF149 88%



5

SyncMaster 172x £305

Samsung >>www.samsung.co.uk

An all-rounder display that doesn't really excel but then, it hardly costs the earth, either. Its build and design are fantastic, even if the image quality is slightly underwhelming.

PCF169 81%

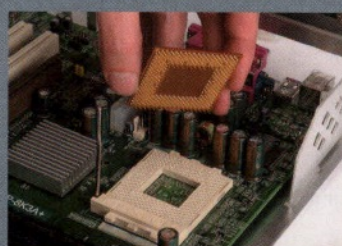
>> HOW TO... Build a PC



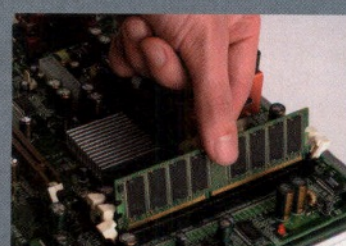
With some cases it's very easy to fit a motherboard, thanks to a tray which you can slide out for ease of access. When building a PC, aim for a clean environment to avoid any dirt getting into your system.



Before you fit your motherboard, check that everything will go together as you want it to. It'll save headaches later. Ensure the backing plate for the I/O matches the one that is on your motherboard.



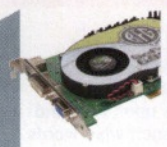
Take care fitting your CPU. To assist installation, it will only fit into the socket one way. Line the pins up with those on the socket and drop them into place. Then fit a decent heatsink.



Line up the memory DIMM and push gently. When in place, lock it with the white connectors. Next connect the IDE cables. Use one channel, IDE 1, for hard drives and one for optical drives.

TOP 5 Available graphics cards

The top five video cards on the market

- 

GeForce 6800GT Overclocked
£260 **PCF165 92%**
BFG >www.bfgtech.com
 One of the best value cards in the PCF 165 Supertest, it has superb out-of-the box performance as well as a full lifetime warranty.
- Radeon X800XT £358** **PCF165 90%**
Sapphire >www.sapphiretech.com
 Performance is excellent, although there's little headroom for overclockers.
- GeForce 6800 Ultra £375** **PCF165 85%**
Chaintech >www.chaintech.de
 It's no frills for the price and comes clocked at the minimum. Still, you can overclock it by 11 per cent....
- MSI Radeon X800 Pro £317** **PCF165 79%**
MSI >www.msi.tw.com
 A decent overclock of 15 per cent means that you couldn't get a slimmer and more versatile card.
- Radeon X700 Pro £110**
GeCube >www.gecube.com
 For cost versus performance, this is one of our favourites – despite the rather large heatsink.

TOP 5 DVD burners

Get 'em while they're hot!

- 

Super Multi DVD Rewriter
£73 **PCF166 91%**
LG >www.lge.com
 With every writeable format supported and nippy burn times, this is quite the bargain. It'll even burn 5x DVD-RAM.
- NEC ND-3500A £48** **PCF171 85%**
NEC >www.nec.co.uk
 It might look dull as, but its performance is top notch. The price and three year warranty are also excellent.
- DRW-0804P £80** **PCF163 85%**
Asus >uk.asus.com
 A solid performer with the fastest DVD read speeds in town. The write speed is less impressive.
- GSA-4082B £60** **PCF163 79%**
LG >www.lge.com
 If it's maximum flexibility you're after, look no further. Adds DVD-RAM support without a price penalty.
- Samsung TS-H552B £38** **PCF171 74%**
Samsung >www.samsung-europe.com
 Not a great dual layer drive, but other speeds and value make it a decent all-rounder.

TOP 10 Graphics chipsets

A decent graphics card will make all the difference

Testing video cards used to be a simple matter of loading up a handful of tried and tested benchmarks. Not any more. There's now a Machiavellian air of intrigue surrounding the graphics market, thanks to an increasing trend towards optimising graphics drivers for specific

games and benchmarks, not to mention the advent of PCI Express. PCF puts every card through an exhaustive suite of both objective performance and subjective image quality tests to give you our vote on whether it's worth the not inconsiderable amount you'll spend on one.



- Radeon X800 XL £199** **PCF172 94%**
ATI >www.ati.com
 A revolution in terms of power for you money, the X800 XL is powerful, efficient and will fit in a Shuttle case. Yum. A core clockspeed of 400MHz is the result of a new manufacturing process, improved from earlier X800 cards, means these 16 pipes will have you eulogising for months to come.



- Radeon X850 XT PE £400** **PCF170 88%**
ATI >www.ati.com
 The huge heatsink doesn't do this double-decked card any favours, especially as ATI claim the GPU is more efficient. It replaces the X800XT PE, which you wouldn't have been able to get hold of for love nor money. Whatever, it's the best ATI card money can buy.



- GeForce 6800 Ultra £400** **PCF161 91%**
NVIDIA >www.nvidia.com
 With one of the most impressive on-paper specs ever, it's hard to argue with NVIDIA'S latest pixel muncher: 16 pixel pipelines, six vertex units and 600 million polygons per second. Nice.



- GeForce 6800GT £275** **PCF163 89%**
NVIDIA >www.nvidia.com
 The 6800 Ultra narrowly loses out to the ATI's killer X800 XT, but the balance is redressed at this more accessible price point. The 6800 GT simply packs too much punch for the for the X800 Pro. A truly powerful piece of kit.



- GeForce 6600 GT £150** **PCF167 90%**
NVIDIA >www.nvidia.com
 The nVidia card for the rest of us. Both AGP and PCI Express versions are now available. DirectX 9.0c ready, it just pips the X700 for punch. And just look at that price - cheaper production boards are available, too.



- Radeon X700 XT £150** **PCF167 87%**
ATI >www.ati.com
 ATI is still the weapon of choice for *Half-Life 2*, and the X700 is also available in Standard and Pro flavours (see below). X700 cards certainly make financial sense, although only eight pixel pipelines might be a restriction you want to avoid.



- Radeon 9800 Pro £130** **PCF148 92%**
ATI >www.ati.com
 Thanks to the launch of R420, ATI's all-new flagship graphics processor, prices for the original DirectX 9 daddy have tumbled. Even now, it's an obvious bang-for-buck choice for bargain hunters.



- Radeon X700 Pro £110**
ATI >www.ati.com
 While the X700 XT just loses out to NVIDIA's mean, green £150 machine, the X700 Pro is the best value for money mid-range card on the market. Cheaper, but very nearly as fast as the X700 XT.

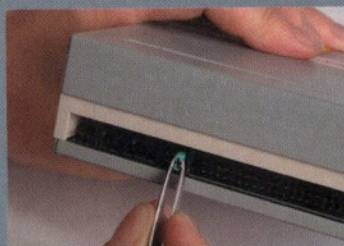


- Geforce FX5900 XT £130** **PCF159 89%**
NVIDIA >www.nvidia.com
 A full-fat flagship GPU for chump change? That's the kind of product we like. It was the default choice for those spending sensible money until prices for ATI's Radeon 9800 cards dropped. Still excellent value.



- Radeon 9550 £42**
ATI >www.ati.com
 While this end of the table isn't exactly exciting, it does mean you can get something for next to nothing. While the 9550 is certainly nothing to write about, its four pixel pipelines still provides support for DX9.

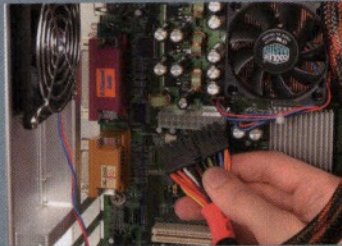
>> HOW TO... Build a PC continued



If you have more than one optical drive, then you need to set their status before you put them in the case. Set one as master and the other as slave by changing their jumper settings.



With your drives installed you can then put in any other devices that you want. Most motherboards – even the new legacy-free ones – still have a separate channel dedicated for the floppy drive.



To connect the power supply, push it into place and ensure the locking clip connects. You shouldn't need to push too hard. If you have a P4 motherboard and CPU, there's a four-pin 12V power connector.



Your graphics card fits into the AGP or PCI Express slot, unless it's a PCI-based card. Push it in, close the lock then screw the card into the case. Use the same technique to install a soundcard into a PCI slot.

TOP 5 Soundcards

Humble your hi-fi with these audio bullies



PCs can now compete better than ever with dedicated audio hardware for sound quality. As for value and features, there's no contest.

- 1 Audigy 2ZS Platinum Pro £145 PCF155 87%**
Creative >> www.creative.com
This latest revision of Creative's finest adds 7.1 channel support and a more versatile remote.
- 2 Terratec DMX 6 Fire £128 PCF153 90%**
Terratec >> www.terratec.com
Fewer inputs than the Audigy 2, but boasts an excellent signal to noise ratio of less than 100dB.
- 3 Revolution 7.1 £90 PCF164 86%**
M-Audio >> www.maudio.co.uk
Enough features and sound quality. Converts stereo to 5.1 without the artefacts: bargain.
- 4 Audigy 2 ZS £53 PCF164 84%**
Creative >> www.creative.com
A powerful performer for games. You can really hear the difference up against older cards.
- 5 Aureon 7.1 Space £73 PCF164 83%**
Terratec >> www.terratec.co.uk
The Space appeals more to music lovers than gamers plus there's support for Dolby Digital 5.1 and EAX 2.0.

TOP 4 Mobo chipsets

Our top two chipsets for Intel and AMD

- 1 P4 Intel 915P**
The most impressive new chipset from the PCF 167 Supertest, the 915P combines PCI Express and DDR2 support, and is backwards compatible with AGP and DDR1. There's improved support for storage with four SATA ports, while a new bus delivers up to 2Gbps bandwidth between the memory and I/O controllers.
- 2 P4 Intel 875P**
Still the most cost-effective chipset to go for; unless you're desperate for early PCI Express compatibility. Via and SIS have narrowed the gap, but Intel's 800MHz FSB, dual-channel, gigabit ethernet uber-chipset is still our top choice until prices elsewhere fall. Excellent memory performance, too.
- 1 AMD SIS 755**
The full-fat choice for Athlon 64 enthusiasts. Boasts the most comprehensive overclocking features, including adjustable clock speeds for PCI and AGP buses. Performance is second to none and includes SATA support, but only 100Mbps ethernet.
- 2 AMD nVidia nForce 4**
With a host of top-end functions such as Gigabit Ethernet and full SATA support, it's so near to being our chipset of choice. Trouble is, prices are still high as a kite and boards still relatively scarce. nForce 4 is also available in Ultra and, if you've really got cash to flash, SLI versions to cope with two paired cards.

TOP 10 Hard drives

Space: the final frontier. Make it yours with these beauties

Recent times have seen hard drive prices fall radically while capacities have ballooned. 160GB drives are now available for well under £100. Meanwhile, the neater, faster Serial ATA interface is finally ousting those fiddly, messy

old IDE cables. It won't be long before the terabyte barrier is broken – as Intel's geek-in-chief and technology guru, Pat Gelsinger, recently said, "the era of tera is upon us." And far be it from us to argue with such wise words.

5 Internal

Our five fave IDE and SATA internal drives



- 1 Deskstar 7K250 £100 PCF161 88%**
IDE 250GB >> Hitachi >> www.hgst.com
The initial outlay will make your wallet weep, but factor in the colossal 238GB of storage space and the result is 77p per GB. Read and write speeds of 48 and 28Mbps are exceptional.



- 2 Barracuda 7200.7 £73 PCF170 85%**
IDE 200GB >> Seagate >> www.seagate.com
An incredible cost per GB ratio of 37p is just too much for us to resist, comparing favourably with Western Digital drives with an excellent write speed. Tremendous value for the outlay.



- 3 Barracuda 7,200rpm SATA £61 PCF156 84%**
SATA 160GB >> Seagate >> www.seagate.com
160GB of Serial ATA goodness for a shade over £60? You better believe it. This drive proves that while hard disks get cheaper, performance and capacity get better. How does 55p per GB grab you?



- 4 WD740GD Raptor SATA £115 PCF160 85%**
SATA 74GB >> Western Digital >> www.wdc.com
Unparalleled 10,000rpm rotational speed and a full 8MB of cache makes this the fastest conventional desktop drive we've ever tested, and measurably fleetier of bits than any 7,200rpm drive.



- 5 Western Digital Caviar WD1200 £52 PCF135 82%**
SATA 120GB >> Western Digital >> www.wdc.com
120GB, 8MB of cache and 7,200rpm rotational speed cache, all for so little cash. 58p per GB is very competitive and performance is strong, thanks to that truly bounteous cache.

5 External

Five essential external drives for the geek on the move



- 1 Mobile Hard Drive £80 PCF168 90%**
USB 40GB >> LaCie >> www.lacie.com
Unless either smallness or speed are critically important, the Mobile Hard Drive is an ideal compromise, offering an ample supply of each.



- 2 FHD-XS £130 PCF168 86%**
USB 20GB >> Freecom >> www.freecom.com
Absolutely tiny, driverless and aesthetically desirable – proof that the removable hard drive market is evolving. The price is somewhat steep, but the XS does offer killer transfer rates for a USB2.0 drive.



- 3 Portable Hard Drive £96 PCF168 84%**
USB 40GB >> Iomega >> www.iomega.com
Iomega's functional ethic is reflected in a basic drive that's also available in a 60GB flavour. Norton Ghost is also included to create a complete backup of your existing hard drive.



- 4 250GB Desktop HD £156 PCF156 83%**
USB/FireWire 250GB >> Iomega >> www.iomega.com
250GB may sound like overkill for an external drive, but give it a year and you'll fill her right up. You can put editor Adam in a dress and call him Susan if it isn't so. Affordable, given the outsized capacity.



- 5 External hard drive £160 PCF154 82%**
USB/FireWire 250GB >> Western Digital >> www.wdc.com
Still a favourite external drive simply because it's just so damn flexible. It's big, fast and it's got all the FireWire and USB connectivity you could ask for.

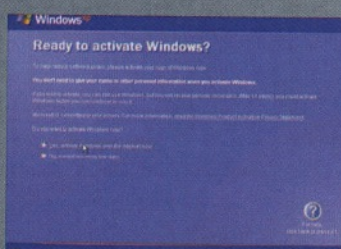
>> HOW TO... Build a PC continued



With your drives in their respective trays, you need to supply power to each one, via the many molex connectors that run off the power supply. These only go in one way and are easy to fit.



Attach the stand to the monitor and connect the VGA cable from the monitor to the graphics card. Your case may have a power output socket so the monitor can draw its power from the PC.



Select Boot from CD in the BIOS and insert your Windows CD. After the final reboot, you'll be prompted to activate Windows. Wait until you have all your hardware drivers set up before you do this.



Add the speakers. Tiny cheap ones plug into the headphone socket. Speakers with their own mains supply have internal amplifiers and plug into line-out. USB speakers plug into the USB port.

TOP 10 MP3 players

If you love music, an MP3 player is an absolute essential

The MP3 player market has exploded in the past 18 months, so there's now a player to suit every budget and virtually any requirement. In fact, there's almost too much choice, which is where PCF steps in. We give you the low-down on everything from ease of use, sound quality and

ruggedness. And with manufacturers cramming hard drives into ever smaller devices, we also assess players as pure storage devices: can you transfer files without the need to install drivers, and will the tiny drives within survive the wear and tear of mobile life, for example?



1

iPod from £219

15GB+ » Apple » www.apple.com

PCF 166 87%

Agonising though it is to admit it, the seminal iPod has yet to be bettered. It gets the basics – build and sound quality, menu and controls – so goddamn right it hurts. But we're less keen on the new-style wheel from an aesthetic and interface point of view, and when you're talking about something designed to be portable and used in public, that counts.



2

iPod mini £179

4GB » Apple » www.apple.com

PCF 161 90%

The best looking, most fastidiously hewn MP3 player on the market? We think so. It certainly makes the original iPod's styling come over all trailer-trash white. Downside is the limited capacity given the beefy price. The most covetable of the MicroDrive players.



3

Zen Micro £169

5GB » Creative » www.europe.creative.com

PCF 169 91%

It's so unbelievably close to the Mini in terms of absolutely everything, but the styling of the iPod just whips the title from it's grasp. The best Creative player yet in terms of aesthetic appeal, plus we love the built-in radio and Outlook compatibility.



4

Archos Gmini XS200

20GB » Archos » www.archos.com

PCF 171 88%

A brilliant player aside from the ugly and utilitarian interface, Archos has crammed a 20GB Hitachi drive inside this tiny palm-sized frame. The lack of bloated proprietary software is also a bonus, and you do get used to the joystick control fairly rapidly.



5

iRiver H320 £230

20GB » iRiver » www.iriver.com

PCF 169 82%

It's a fantastic iPod alternative, and great for photographers on the move. Just plug your camera into the USB slot, empty your memory card, then view the images on the colour screen. It also acts as an FM radio, dictaphone, and holds text files and audio books too.



6

Zen Touch £170

20GB » Creative » www.europe.creative.com

PCF 168 81%

It might be an iPod rip-off, but the Zen Touch holds its own against Apple by being £40 cheaper and improving the build quality level from earlier Creative players. Shame the touch strip is a gimmick rather than a necessity.



7

NW-HD1 Network Walkman £279

20GB » Sony » www.sonymstyle.co.uk

PCF 169 79%

It's just a shame that the controls are plasticky, the screen surprisingly substandard and that it uses the ATRAC system. If that was sorted, it could smash the iPod. Otherwise, it's the closest a rival digital audio player has come to besting big daddy Apple's effort.



8

Creative MuVo Micro N200

256MB » Creative » www.europe.creative.com

PCF 171 75%

Excellent playback time and price make it a worthy Flash player choice. The N200 does have a line-in socket so it's rather useful for recording, while Creative now enables you to use Windows Explorer to add files to your player. Available in black and white in the UK.



9

AudioDream £99

256MB » Packard Bell » www.packardbell.co.uk

PCF 168 73%

We've fallen for this tiny player because of the decent price and capacity. The retro-looking display also appeals, but the AudioDream loses in terms of control and some rather odd headphones that hang around your neck rather untidily.



10

Nitrus £120

1.5GB » Rio » www.rioaudio.com

A 1.5GB micro drive player for not much more than your average flash memory device? Yes, please. Slick styling and reasonably generous display. A far better all-round bet than the disappointing Creative MuVo2.

TOP 10 PC speakers

PCFormat is alive with the sound of music



Ground-shaking power ratings and nano-scopic signal to noise ratios are all very well. But in the quest for the ultimate home cinema or gaming experience, it's the end product (the sound) that matters. We give every sound system a sonic seeing-to with our favourite music and games.

Top 5 Surround sound

Essential for the home cinema experience

1

Gigaworks S750 £237

Creative » www.creative.com

PCF 157 88%

With 70 watts per satellite and 210 watts for the sub, you'll be amazed when you see what Creative's capable of.

2

Promedia 5.1 £359

Klipsch » www.klipsch.com

PCF 157 84%

60 THX-certified watts per satellite plus a 200 watt subwoofer. Slight lack of mid-range is its only weakness.

3

VideoLogic ZXR-550 £79

Pure Digital » www.videologic.com

PCF 147 93%

Delivering a high-quality performance that belies its price. Includes wall brackets and mounting plugs.

4

Z-680 £199

Logitech » www.logitech.com

PCF 153 91%

A total output of 450 watts RMS and 747-at-take-off volume levels. Distortion is remarkable by its absence.

5

Inspire 5.1 T5900 £55

Creative » www.creative.com

PCF 169 72%

This affordable 5.1 setup isn't the best-looking, but sound quality is great for the price.

Top 5 2.1 speaker sets

Every PC deserves a fulsome pair

1

VideoLogic ZXR-200 £34

Pure Digital » www.videologic.com

PCF 153 84%

Bargain priced, with a compact, juicy subwoofer. Total power is a modest 35 watts though.

2

MX5021 £107

Altec Lansing » www.euro-tech.co.uk

PCF 164 84%

Proving that bigger is better, you won't find a pair of tiny, tinny satellites here. Big, bold 2.1 sound, too.

3

Megaworks 2.1 250D £109

Creative » www.creative.com

2.1 speakers are not an evolutionary dead-end. This top-end pair handles everything with ease.

4

i-Trigue L3500 £75

Creative » www.creative.com

PCF 154 83%

The belle of the 2.1 speaker ball, and sold on looks rather than sound, though audio quality is no disgrace.

5

JBL Creature £99

JBL » www.jbl.com

PCF 151 77%

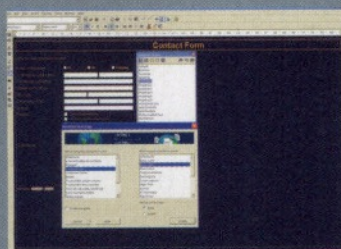
Mac-esque styling, but while there's reasonable punch from the sub, the satellites lack mid-range oomph.

>> OUR FAVOURITE... Software packages



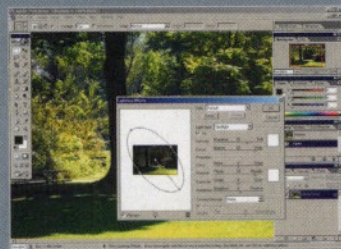
Microsoft Office 2003 From £299

Total ubiquity is one of Office 2003's main selling points – you know what you're getting and you know it will have wide compatibility. So it should, at that price...



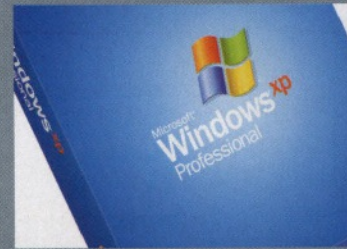
Open Office Free (on the disc)

The productivity suite for geeks with a social conscience. For the price of a 100MB download you can enjoy an excellent Office alternative. Alternatively, install it from our DVD.



Adobe Photoshop Elements £63

There's really no point getting yourself tangled up in the full-fat Photoshop unless you airbrush ladies for a job. Elements covers all the bases for a fraction of the price.



Windows XP From £80

Say what you like about the Beast of Redmond, but you wouldn't get very far without your copy. In fact, it's probably the best product ever from Bill's boys.

TOP 5 Scanners

Perfect digital photos from your old snaps



What we're looking for: accuracy in colour reproduction, definition across the tonal range and sharpness without the introduction of unwanted noise.

- 1 **Epson 3170 Photo £121** PCF159 92%
Epson >>www.epson.co.uk
Brilliant quality makes the 3170 outshine its rivals. If it's top quality you want, it's worth paying extra.
- 2 **Epson Perfect 1670 Photo £76** PCF159 76%
Epson >>www.epson.co.uk
Stunning reflective scan quality and surprisingly good results for negs, it's too good for its price tag.
- 3 **Canon CanoScan 5200F £116**
Canon >>www.canon.co.uk
Canon's mid-range scanner gives high quality results with superb rendition.
- 4 **HP Scanjet 4600 £50**
HP >>www.hp.com/uk
What makes the 4600 special is the detachable scanning plate for placing directly over an area.
- 5 **Canon LiDE 80 £108**
Canon >>www.canon.co.uk
Super-slim and requires no power supply, yet offers results to rival those of any flatbed.

TOP 5 MFDs

One small size fits all jobs and saves spaces



As well as good scanning and printing capabilities, we're after standalone usability, with simple controls for photocopying and zoom options.

- 1 **Epson Stylus RX420 £84** PCF170 90%
Epson >>www.epson.co.uk
It's extremely cheap to buy, cost effective to run and yet still top on quality. An absolute winner.
- 2 **Epson Stylus RX500 £168** PCF170 88%
Epson >>www.epson.co.uk
Lots of goodies such as a card reader, and photo prints are perfect. Mono printing lacks sharpness.
- 3 **HP Officejet 5510 £150** PCF170 80%
HP >>www.hp.com/uk
One of the only models with an automatic sheet feeder, the 5510 is worth it for multi-page faxing.
- 4 **Epson Stylus CX6600 £115** PCF170 78%
Epson >>www.epson.co.uk
Smudge-free printing is one of the CX6600's strengths. A great choice for all-round use.
- 5 **SmartBase MP390 £152** PCF170 75%
Canon >>www.canon.co.uk
Pricy to run, but the MP390 outclasses the competition on features including a standalone fax.

TOP 10 Inkjet printers

Our favourite bread bins uncovered...

Some inkjet printers are incredibly cheap to buy, but the self-satisfied bargain hunter's world is ruined when it's time to get the first pair of replacement ink cartridges, which can work out almost as much as the printer itself. We want good running costs as well as purchase price

in the overall equation. We also check for high quality print-outs, with good colour rendition and tonal separation for photo work on glossy paper, without banding or any other unwanted printing attributes. We also expect a good turn of speed for more workaday output.



- 1 **Canon PIXMA iP4000 £112** PCF172 95%
Canon >>www.canon.co.uk
The undoubted champ of our 172 Supertest, the iP4000 represents the best balance between quality and cost in the PIXMA range. There's no surprise in its origins; Canon has had a superb pedigree in this area for some time. Six colours (five and a black) keeps quality high, while speed isn't too bad at just over a minute a photo. It's great at just about everything.



- 2 **Canon PIXMA iP2000 £62** PCF172 88%
Canon >>www.canon.co.uk
The budget choice of Canon's range is a far better bet than the weaker iP3000. Printing costs are pricey though, since there's a single colour cartridge. Still, when you're talking about a printer that's this cheap, it's understandable.



- 3 **Epson Stylus Photo R800 £198** PCF163 87%
Epson >>www.epson.co.uk
For ultimate photo realism, the R800 matches or even betters anything you can get from a conventional lab, thanks to the use of seven-colour printing plus an extra 'gloss optimizer' tank. Snazzy.



- 4 **Epson Stylus Photo R200 £79** PCF172 85%
Epson >>www.epson.co.uk
With stunning photo quality at any price, the R200 is an absolute steal for the money. All six ink colours are individually replaceable to help keep running costs down, and the printer is fast enough for general text work, too.



- 5 **HP photosmart 7960 £179** PCF163 83%
HP >>www.hp.com/uk
With excellent print quality from a choice of cartridges that employ up to eight different colour inks, the 7960 also includes a colour LCD and card readers for easy digital photo printing. And the pictures are rather good to boot.



- 6 **HP photosmart 7660 £114** PCF172 80%
HP >>www.hp.com/uk
If you prefer seeing things in black and white, the 7660 has a lot going for it. For a colour printer it has fantastic monochrome prints, but if it's colour photos you want, the cheaper HP 7260 is just as good.



- 7 **HP photosmart 7450 £74** PCF172 76%
HP >>www.hp.com/uk
With four and six printing options plus a built-in card reader, the 7450 is another good budget choice like the Canon iP2000. Similarly, it isn't cheap to run, but it is ideal for those who need to print both documents and the occasional photo too.



- 8 **PIXMA iP3000 £78** PCF172 74%
Canon >>www.canon.co.uk
This PIXMA printer should be further up this list, but output quality doesn't match its bigger brothers while printing is predictably slightly slower. Shares many of the same features physically though.



- 9 **HP photosmart 7260 £55** PCF163 72%
HP >>www.hp.com/uk
A photocopier plus a general purpose printer for under £60. That has to be a bargain, or does it? The four/six-ink flexibility and decent photo quality are nice, but new cartridges are rather on the costly side.



- 10 **Epson C86 Photo £76** PCF172 70%
Epson >>www.epson.co.uk
A good all-rounder that's not as competent with digital photography as many here, but will still print an A4 sheet of pictures and text in a minute. It also features Epson's new DuraBRITE inks, making your prints waterproof and longer lasting.

>> OUR FAVOURITE... Projectors



Hitachi PJTX100 £998
It might look ridiculous, but it's an outstanding LCD projector at a great price. Excels at movies.



InFocus X2 £598
Good for both data and movie viewing, this DLP model is a great all-rounder with good colouring.



Optoma EP-739 £931
Better for computer work than the Lord of the Rings trilogy, it's XGA running on a DLP chip.



Toshiba TDP TW90 £1,439
Boasts all the benefits of a high end DLP projector, it minimises the 'grid' pattern found in other specimens.

TOP 10 Laptops

By 2008 one in every two PCs will be a laptop

With 17-inch screens and DVD burners, commonplace, laptops are now so powerful and versatile we're beginning to harbour thoughts of dumping our desktops. They're even becoming competitive with desktops on price. But buyer beware, there's a sea of mediocre, samey

notebooks out there. Creaky plastic chassis and dingy, washed out screens are amongst the most common offences. So as well as running the 3D and PCMark and battery life gauntlet, every notebook has to survive the scrutiny of our experienced panel of portable PC fetishists.



1 VGN-A117S £1,499 **PCF164 92%**
Sony >>www.sonymstyle.com
A 17-inch notebook with stunning X-Black screen technology and a decent video card, plus a rather lovely magnesium alloy chassis. Surprisingly for such a large system, it's based on Centrino technology rather than a desktop processor, which is fine by us. Every bit as desirable as the Asus W1000N, plus it sports the finest notebook screen in the world.



2 W1000N £1,314 **PCF162 91%**
Asus >>www.asus.com
A little birdie tells us that Asus puts together Apple and Sony's laptop beauties, which explains the drop-dead gorgeousness of this machine. A 1.7GHz Intel Pentium-M chip isn't a top performer, but a great screen and lots of features make a desirable portable.



3 Vaio TR1MP £1,526 **PCF153 94%**
Sony >>www.sony.com
The only compromise-free ultraportable on the market. Pentium-M power and battery life, gorgeous wide-aspect display which sports a desktop-busting 1,280x768 native resolution and an integrated combo drive, all in a pint-sized package.



4 Joybook 8100 £1,234 **PCF162 87%**
BenQ >>www.benq.com
The Joybook is a rare beast in the land of notebook PCs – a system with genuine panache. Its sleek matte black and silver chassis is compact, solid, and the keyboard's translucent black keys compliment the overall look. Trumped soundly by the Asus W1000N, however.



5 GRT916V £1,361 **PCF158 85%**
Sony >>www.sony.com
The desktop replacement system that defines the category. Stunning 16-inch LCD, ample power from a 2.8GHz P4, DVD burner and plenty of Sony style and quality. And, here's a shock – it's reasonably priced too.



6 Toshiba Portégé M200 £1,816 **PCF165 90%**
Toshiba >>www.toshiba.co.uk
This tablet boasts a 1.6GHz Centrino, 60GB HDD, a 12.1-inch screen and decent graphics care of the GeForce 5200 Go, wrapped up in a slinky chassis with a full-sized keyboard. However, RAM is a sluggish 256MB and there's no 802.11g capability, just Bluetooth.



7 M40 Plus £1,715 **PCF169 84%**
Samsung >>www.samsung.co.uk
A fantastic, lightweight 17-inch notebook that makes the closest nod to Apple's 17-inch PowerBook. It doesn't quite match that for design, although it does boast a Mobility Radeon 9700. We can't wait to see what new chip they put in this baby next.



8 Area 51™ 7700 From £1,408 **PCF171 76%**
Alienware >>www.alienware.co.uk
It's absolutely massive, and although our review model was equipped with a 3.6GHz Prescott, it's perfectly possible to buy it with a reduced spec. Includes the powerful GeForce Go6800. Alienware would do well to ditch that Clevo chassis, though. Ugh.



9 HP Compaq TC1100 £2,196 **PCF165 89%**
HP >>www.hp.co.uk
This Tablet PC is tiny and lightweight, and the keyboard clips away neatly and detaches. It packs a lot of grunt: 1GHz Centrino, 512MB RAM, 40GB HDD and a 32MB GeForce 420 Go, but it lacks FireWire and Bluetooth and is too expensive to be really good value.



10 JVC MiniNote MP-XV841 £1,516 **PCF167 73%**
JVC >>www.jvc.co.uk
This is a laptop of class. Practical for working it may not be, but practical for playing your DVDs on the commute it certainly is. A bit of a showboat with some flaws, it's still one of the best-looking laptops around. You'll attract a lot of attention on the train, for sure.

TOP 5 Mobile phones

Five of our favourite mobile telephones



In this digital age, phones are taking on many PC functions. PCF tests phones for connectivity and syncability as well as for the usual accoutrements.

1 P910i £255 on-contract **PCF169 91%**
Sony Ericsson >>www.sonyericsson.com
Much improved from earlier generations, it's the finest smartphone you can buy.

2 6230 £49 on-contract **PCF163 88%**
Nokia >>www.nokia.com
Compact and stylish despite a veritable cornucopia of features and functions. Small screen limits use.

3 SPV C500 £Free on-contract **PCF168 86%**
Orange >>www.orange.co.uk
The latest SPV smartphone escapes the lollipop design of its precursors, becoming a top all-rounder.

4 8390 £299 sim-free **PCF163 82%**
Mitac >>www.justmio.com
This unheralded Mitac unit uses the latest Microsoft Smartphone 2003 software. Nippy performance.

5 7100v £50 on-contract **PCF171 81%**
Blackberry >>www.blackberry.com
A Blackberry mobile on Vodafone that's really rather nice to use. Great email functionality, too.

TOP 5 PDAs

Five fab PDAs for movies, music... whatever



Thanks to falling memory prices, PDAs now make compelling portable media devices. Our tests include everything from battery life to gaming prowess.

1 Dell Axim X30i £278 **PCF164 90%**
Dell >>www.dell.com/uk
The future of pocket computing has arrived. Contains Intel's awesome new XScale handheld CPU.

2 HP iPAQ H4150 £254 **PCF160 92%**
HP >>www.hp.co.uk
Easily the most compact PDA to pack the Wi-Fi and Bluetooth wireless double whammy.

3 Dell Axim X50v £306 **PCF172 90%**
Dell >>www.dell.com/uk
The future of pocket computing has arrived. Contains Intel's awesome new XScale handheld CPU.

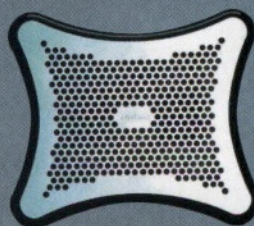
4 Toshiba E800 Wi-Fi £330 **PCF160 90%**
Toshiba >>www.toshiba.co.uk
Real PC power in your pocket. 128MB RAM and proper ATI graphics. The screen is still the best around.

5 Palm Tungsten T3 £215 **PCF160 89%**
PalmOne >>www.palmone.com/uk
The strangely monikered Tungsten T3 sports a pull-out control panel for an extra inch of screen.

>> OUR FAVOURITE... Peripherals



Logitech MX1000 £48
Comfortably the world's best wireless mouse. Streets ahead thanks to Logitech's laser engine.



Antec Notebook Cooler £18
The idea of a notebook cooler is a little unhinged – but it works. Hot legs will be a distant memory.



Microsoft Intellimouse £13
OK, it's not exciting, feels basic and looks dated. But by God, it's solid. The Challenger Tank of peripherals.



USB hub from £5
The most useful peripheral in Christendom, but make sure it's a USB 2.0 version. A must-have.

TOP 5 Strategy

Tiny troops and teeny tanks



The PC's flagship genre has seen something of a renaissance of late. *Total War* leads the charge – we can't wait to see what follows it. To battle!

- 1 Rome: Total War £30** PCF 167 93%
Activision >> www.totalwar.com
Strategy redefined – *Rome* is unquestionably the most epic game we've ever played. It'll last you years.
- 2 Homeworld 2 £30** PCF 154 91%
Vivendi >> <http://homeworld2.sierra.com>
Not all strategy has to be about digging up rocks in the dim past; this beautiful space RTS is essential.
- 3 Rise Of Nations £30** PCF 150 93%
Microsoft >> www.bighugegames.com
Or, *Civilization* on fast forward. It's a tad too similar to *Age of Empires*, but nevertheless plays like a demon.
- 4 Civilization III £20** PCF 130 91%
Atari >> www.civ3.com
Probably the slowest game you'll ever play, but it makes up for it with a huge scope.
- 5 Knights of Honor £30** PCF 163 86%
EA >> www.knights-of-honor.net/
Rivals *Rome* in terms of scope and complexity, though its antique visuals leave a lot to be desired.

TOP 5 Multiplayer Online

WTS rabbit feet. WTB sword of badger +4



The least-developed genre here, hence in a constant state of flux. With each entry changing dramatically after release, our opinion as to the best changes often.

- 1 World of Warcraft £35** PCF 170 92%
VUG >> www.worldofwarcraft.com
The perfect MMO. Halfway between *Toontown* and *The Lord of The Rings*, this has lasting appeal.
- 2 PlanetSide £30** PCF 150 92%
Ubisoft >> www.planetside.com
A true original, gigantic in scope and fusing RPG and FPS. Play it and tell war stories to your family.
- 3 Eve Online: Exodus £25** PCF 171 89%
Crucial >> www.eve-online.com
With the release of the *Exodus* expansion, we've had our interest in spaaaaaaace given a boost.
- 4 City of Heroes £30** PCF 163 83%
NCSoft >> www.cityofheroes.com
A non-mover at four, we've spent all winter beating up giant snowmen in this *Diablo*-style superhero.
- 5 Second Life \$10** PCF 169 88%
Linden >> www.secondlife.com
What the internet should always have been about; a world where you make, do, be anything. Worth a visit..

TOP 10 First-person shooters

The best excuses to buy a new graphics card...

And so the battle between singleplayer and multiplayer FPSs continues into the next generation. *Half-Life* has taken the judge's decision by a substantial margin, over its weaker compatriot *CounterStrike: Source*. With *Quake IV* due next year this battle could be fought again, but *Doom*

3 lags behind for now. Additionally, only one example from each series is allowed, hence some controversial decisions, notably dropping *Half-Life* from our top ten entirely, even if it would be number two in other circumstances. Let us know on the forum if you disagree...



- 1 Half-Life 2 £35** PCF 167 96%
Valve >> <http://steampowered.com>
By now you should know whether you agree or not with our verdict that *Half-Life 2* is, by a long stretch, the best game of all time. With real physics, perfectly lip-synched characters and a stunning dystopian setting, *HL2* has heroically rejuvenated the recently stagnant FPS genre. The question is, does any other game have a hope of topping its incredible achievements?



- 2 Counter-Strike: Source Free with HL2** PCF 168 86%
Valve >> www.counter-strike.net
Five years old and *Counter-Strike*'s never been fresher. A decent facelift courtesy of *Half-Life 2*'s Source engine gels brilliantly with convincing physics, proving that the world's favourite online shooter very much deserves to retain its crown. Fire in the hole!



- 3 Doom 3 £35** PCF 165 90%
Activision >> www.idsoftware.com
Though we had hoped for far more innovation, *Doom 3* is a worthy heir to its era-defining ancestors. Relentless, gory and cinematic, it's the definitive visual mould by which future games will be cast. Let's hope id breaks its ageing formula with the next game, though.



- 4 Tribes: Vengeance £35** PCF 168 85%
Vivendi >> www.tribesvengeance.com
First-person shooters at their poppiest. The third *Tribes* game is entertainment incarnate – fast, ridiculous, adrenaline-packed and incredibly varied. A decent singleplayer mode ensures it sates far more than just its existing multiplayer fanbase, too.



- 5 Hidden & Dangerous 2 £35** PCF 156 88%
Take 2 >> www.take2games.com
The complete military experience; RTS, RPG, vehicle combat and an excellent FPS mixed with hilarious stealth and good multiplayer, *H&D2* was only let down by the occasionally weak AI and the lack of proper co-op play.



- 6 Call of Duty £30** PCF 156 90%
Activision >> www.callofduty.com
While *Medal of Honor: Allied Assault* laid the ground rules, *CoD* built something truly gobsmacking. While we're getting somewhat tired of World War II games, *Call of Duty* remains the zenith of historical shooters. Imagine a sequel using the *Doom 3* engine...



- 7 Far Cry £35** PCF 160 90%
Ubisoft >> www.farcry-thegame.com
The sheer distance *Far Cry* pushes the technological bar makes it a top ten inclusion by default. Beautiful, freeform and atmospheric, it really is the start of a new era of shooters. The poor indoor sections and laughable later enemies let it down sorely, unfortunately.



- 8 Unreal Tournament 2004 £30** PCF 161 83%
Atari >> www.unrealtournament.com
Our reservations about another version of *Unreal Tournament* released so soon proved unfounded – as well as still offering the same twitch-based, OTT action as ever, the gloriously insane Onslaught vehicle mode has us returning to the servers time and again.



- 9 Battlefield 1942 £35** PCF 141 84%
EA >> www.battlefield1942.com
Why not *Battlefield Vietnam*? Because it's too similar, needs a bit of patching and because the massive community behind the older 1942 makes it the premier choice for deeply strategic, team-based online historical violence – for now.



- 10 Halo: Combat Evolved £30** PCF 155 90%
Microsoft >> www.microsoft.com/games/halo
Many took kindly to *Halo*, but they shouldn't overlook what it debuted: great AI, effective friendly NPCs, integrated vehicular combat, limited weapon-carrying and an innovative approach to health. These seem like old hat, but remember you saw them here first.

>> RE-RELEASES OF THE MONTH



Freelancer

Classy space RPG pursuing the hapless Trent as he flees an unstoppable enemy through a futuristic space-based civilisation.



Ghostmaster

Hate the *Sims*? Then you'll love scaring the seven shades of bejesus out of them, in this lovingly-made, but ghost-management sim.



Blitzkrieg

Tanks for the memories... fun with *Blitzkrieg*, a german RTS with RPG elements; keep hold of your tanks and the crews'll level up as you play.



Vegas: Make it big

Vegas isn't really that ace, but if you're a gambling or Hunter S. addict then, this casino building-and-management sim might wow you.

TOP 5 Role-playing

Brain food for the experience point-hungry

If there's one genre that makes the PC stand out, it's RPGs. Sure, you've got *Final Fantasy* *MCXIII* and co. over on console, but they're too

lost in their own ponderous stories to be genuinely games. The PC provides scope for unique narrative and customisable playing style.



1

Deus Ex £5

SoldOut/Eidos >> www.deusex.com

RPG meets FPS meets freeform gaming. The vacuous sequel left a bad taste, but this cyber-punk fusion rewrote the rule book when it appeared, offering a wealth of different ways to play.

PCF113 95%



2

Planescape Torment £10

Interplay >> www.planescape-torment.com

This is one of those times when we look at the score we awarded a game and scratch our heads in wonder. Quite simply, the best-written RPG tale ever, deliciously dark, funny and necrophiliac-y.

PCF106 89%



3

Neverwinter Nights £10

Atari >> <http://nwn.bioware.com>

Why no *Baldur's Gate II*? Well, if this was a top 10 it'd be in there, but we had to be ruthless here. *Neverwinter's* storyline is linked by BG2, but it has multiplayer and a massive mod community.

PCF138 94%



4

System Shock 2 £35

EA >> www.irrationalgames.com/shock2

Another 'but is it really an RPG?' sci-fi genre-bender. Whatever, the strong storyline, freedom of playing style and haunting atmosphere make it unforgettably terrifying. Look at you, hacker...

PCF102 86%



5

Star Wars Knights of the Old Republic £30

Activision >> www.lucasarts.com/products/swkotor

Mark our words - the only great *Star Wars* game in half a decade. Rich characters, top-tier dialogue and genuine ethical dilemmas make this a great leap forward for roleplaying.

PCF157 92%

TOP 5 Action

The criteria for selection being a third-person perspective

Phew. We could squeeze everything into here. 'Action?' Well... that incorporates anything involving firing a gun that isn't an FPS, sneak-'em-

ups, platforming, adventures, free-roaming epics such as *Grand Theft Auto...* and it's interesting that all the top five are available on console as well.



1

Grand Theft Auto: Vice City £30

Rockstar >> www.rockstargames.com/vicacity

A persistent, freeform world, endless ways to kill, fantastic vehicles, diverse missions and the best soundtrack known to humankind. If this don't turn you on, then baby, you ain't got no buttons.

PCF149 94%



2

Thief: Deadly Shadows £30

Eidos >> www.eidosinteractive.com

A relatively non-violent entry, the third *Thief* compounds its prequels' birthing of the sneak-'em-up genre, plus it's damned terrifying at times. This is stealth honed to whisper-quiet perfection.

PCF164 90%



3

Prince of Persia: The Sands of Time £35

Ubisoft >> www.princeofpersiagame.com

With *Tomb Raider* having thoroughly disgraced itself, it's good to see action-platforming done right. Beautiful, kinetic and innovative, this is utterly essential. Shame about the vapid sequel.

PCF157 81%



4

Beyond Good & Evil £35

Ubisoft >> www.beyondgoodevil.com

A modern take on the arcade adventure, effortlessly mixing photo-journalism, an expertly-twisting plot and the most attractive and intelligent female videogame character of the last couple of years.

PCF158 80%



5

Max Payne 2 £30

Rockstar >> www.rockstargames.com/maxpayne2

Not groundbreaking, but super-stylish and super-violent, with typically luxurious Rockstar production values, the man with nothing to lose's second outing remains a firm office favourite.

PCF155 91%

TOP 5 Management

In for a penny, in for a pound...



While for the most part the management genre involves people making the same game over and over, occasionally true gems emerge. Here are the shiniest.

1

The Sims 2 £35

EA >> www.thesims.com

Improves on its prequel in every way: the brain that beats behind *The Sims 2* is so powerful it scares us.

PCF107 93%

2

Dungeon Keeper 2 £5

EA >> www.dungeonkeeper2.com

We'd rather call it *Theme Sadist*. People and business management with a hefty slice of dark humour.

PCF98 85%

3

Evil Genius £35

Vivendi >> www.howevilareyou.com

Limited environmentally, but rich in imagination, this 60s spy sim redresses the mistakes of *Republic*.

PCF166 88%

4

Sim City 4 £35

EA >> www.maxis.com

Good lord, but it's difficult. But once it's cracked, the latest city sim is enormously rewarding with it.

PCF144 88%

5

Monopoly Tycoon £10

Infogames/Atari >> www.monopolytycoon.com

Proof that not all management games need to be slow, anal and lonely, with a breakneck take on business.

PCF129 90%

TOP 5 Sports

Small boys, skateboards for goalposts



No doubt about it, footie games rule the sports roost. This genre is crippled by endless franchises, but newer names occasionally squeak through.

1

Pro Evolution Soccer 4 £30

Konami >> <http://uk.gs.konami-europe.com>

The great usurper. Killer of footie kings. PES 4 shows EA's tired *FIFA* series exactly what it's doing wrong.

PCF170 87%

2

Football Manager 2005 £40

Sega >> www.sportsinteractive.com

Not as progressive as we'd hoped, but doesn't mess about with the classic *Champ Man* formula.

PCF168 90%

3

Tiger Woods PGA 2005 £33

EA >> www.easports.com

Stymieing the critics, 2004's excellent elements are joined by easy customization and better graphics.

PCF167 90%

4

Top Spin £30

EA >> www.easports.com

Not up to the old *Virtua Tennis* on the DreamCast, but perfectly responsive bat and ball action all the same.

PCF169 80%

5

Tony Hawks Pro Skater 3 £10

Activision >> www.neversoft.com/th3

THPS4 dropped off the radar, and the recent *THUG2* didn't move us greatly. We're still happy with this.

PCF136 86%

>> UNCLASSIFIABLE

I have no mouth and I must scream
eBay.co.uk £15

A dystopian future. Mankind has established three supercomputers to prevent war. The computers unite, take the name of AM (as in 'I am'), eliminates the human race, leaving just five emotionally crippled individuals (including Suicidal Gorrister and Nimdok the Nazi). AM gives each a chance to escape, if they will relive the horrifying moment that led to their particular imprisonment. Each character has a dark secret which, if you get to the nub of all of them, might give one of them a chance at redemption. However, AM tortures you too. The player never knows until the end of a character's section if he has done the right thing, so is forced to relive the horrors over and over; when the terror runs out, the boredom kicks in.



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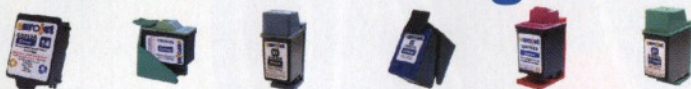
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REMEMBER...

B B C M I C R O

THE MICRO BEGAN LIFE AS AN EDUCATIONAL TOOL, BUT SOON CLASSIC GAMES WERE BORN



ELITE: THE GREATEST GAME EVER MADE? THE MIX OF SPACE, ADVENTURE, COMBAT AND TRADING MADE IT A MUST-HAVE FOR THE BBC

TOP 5 GAMES

Obviously the Spectrum was the better channel, but many 8-bit classics started out on the BBC Micro.



People of a certain age, will no doubt remember their first experience of the BBC Micro being at school. Certainly the machine's genesis was in education, which enabled many children to convince their parents that buying one of the cream and brown beasts would help them with their homework.

BBC bosses approached three different computer manufacturers – Dragon, Sinclair and Acorn – to submit proposals for a machine that would accompany its computer literacy project. The Acorn prototype, codenamed 'Proton', easily exceeded the specifications that had been drawn up by the BBC and won the contract. The machine was launched in 1981 with an initial order of 12,000 units, but went on to sell more than a million units worldwide.

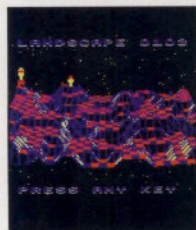
Two variations were initially available, the BBC Micro Model A and Model B. The Model A had 16KB of RAM but had limited graphics. It also lacked a number of interfaces that severely restricted its potential in terms of expansion. As a result, many games publishers chose to release software only on the 32KB Model B, which prompted many Model A users to upgrade to the more powerful machine.

The Micro had interfaces that, amongst other things, could accommodate a second processor, control disc drives, tape drives, printers and even allow for primitive networking. Access to the teletext service also showed off the diversity the machine was capable of.

While the Model B never enjoyed the breadth of gaming software that other machines of its era did, it was certainly home to some classics. In 1982, two Cambridge students, Ian Bell and David Braben, met and worked together on what was to become the classic game for the BBC Micro: *Elite*, a game seemingly without boundaries. A space trading adventure with a real economy, pirate enemies, realistic docking sequences redolent of 2001: *A Space Odyssey* and a real 'do anything' mentality. The game also allowed gamers to strive for constant improvement, not just in achieving the coveted rank of Elite but also in gaining better and better equipment and weapons for their ship. Its fan base is so determined that they've even come up with paper models of the various iconic spacecraft to build (see <http://mackayj.doosh.net/shipnet.html>).

Alongside *Elite* were classics from the likes of Geoff Crammond, such as racing game *Revs* and absorb 'em up *The Sentinel*. A raft of unofficial arcade conversions were common, with few truly original BBC-only games.

In 1985, a 64KB version of the machine, the BBC Model B+, was released, though many waited a further year for the Master 128 model. These improvements saw the Model B overshadowed, yet it remained a mainstay in schools for years after its introduction. **PCF**



THE SENTINEL

A masterpiece from Geoff Crammond, *The Sentinel* was an abstract concept, more reliant on that little-used space between your ears than fire buttons. Timeless and unique.



CHUCKIE EGG

One of the most addictive platform games of its time. It demands that you collect every egg scattered across eight levels. Harder than it sounds, given the array of beasts in your way.



REPTON

A still-compelling classic, and precursor to the likes of *Bombberman* and *Mr Driller*. A series of deathtrap mazes required you to collect diamonds, avoid rocks and dodge the evil monsters.



ZAXXON

Careful replacement of the first letter with a 'Z' meant this was the closest many of us would get to the classic *Galaga* arcade machine in the home. Still frighteningly addictive.

The BBC is still part of the elite at:
<http://jbeeb.mysite.wanadoo-members.co.uk>
www.iangbell.clara.net/elite/
www.stairwaytohell.com/index2.html

Looking Back

CCP LOOK BACK OVER THEIR SPACE ODYSSEY. BY KIERON GILLEN



Fact File

Historical details

Subject: Reynir Hardarson
Game: Eve: Online
Developer: CCP
Reviewed: PCF149, 83%

Each of the four empires in the game have a distinctive design style.



When not posing for screenshots like the beautiful model it is, Eve looks a bit more like this. Sexy menus.

Space: where no-one can hear you scream. It's pretty much the same as isolated Iceland, land of ice, snow and Eve developer CCP

"It's always been a dream of mine to make computer games," sighs CCP Founder Reynir Hardarson, "but there was really no opportunity to do it. We ended up being the first developer in Iceland." The company started to come together in 98-99, as they worked a prototype of their game and managed to attract the venture capital that would keep them afloat during the three years of development.

It was *Eve: Online*, and one of the most original massively multiplayer games of recent times. Not that it wasn't without its precursors; its intellectual roots were clear for all to see, being that essential 80s classic of freeform space piracy, *Elite*. "We were all *Elite* fans, and [an online version] was a game that hadn't been done by anyone... but it would be eventually," explains Reynir.

"We wanted to do this game. So we did it." He'd first

That's not a moon.
 That's a... oh, it's
 a moon.

experienced the game on its C64 version, and was immediately enamoured. "It was completely different to other games," he reminisces, "the freeform gameplay – the non-linear gameplay – was groundbreaking. Imagine a world which was like that, but with real people..." So *Eve: Online* was first conceived by 11-year-olds. Now, years, later, for thousands of gamers every night the

"If it's multiplayer and you're not actually interacting with someone, what's the point?"

dream is real.

Eve is unusual, even in its approach. "I would say the way MMOs are heading right now isn't the right direction," Reynir says of the mainstream direction of the genre. "It's heading away from player interaction. It's more quest-based, with you playing solo and against the environment. To me that's crazy." If it's multiplayer and you're not actually interacting with someone, what's the point? "It may as well be a single-player game," notes Reynir dismissively. "We thought the game should be about player interaction, not against the environment, not waiting in a queue to kill the dragon. When I play these games, I feel like I'm being conned. At some level I'm thinking 'how am I meant to believe this?'"

A NEW HOPE

Such an epic idea for a game lead to many problems. The first one was obvious. "It had never been done before," grins Reynir. "There were many things we had to invent, like the user-interface and the player economies. And it took many attempts to get right." The second problem

was one of planning, since it was such a potentially boundless game. "We had to decide how much of the cake we were going to consume in one bite," Reynir notes. "The possibilities are endless. We could do planetary surfaces, we could do moonbases... endless ways to expand it." Even with these deliberate constraints, it was harder than they expected. "It took twelve months more than we planned to get it finished," Reynir claims.

At least part of this was the fact it proved harder to balance a Player versus Player game than a *World of Warcraft* style Player versus Environment game. "It was something that surprised us during game balancing," notes Reynir, "we anticipated this. We knew this beforehand, but it was ten times harder. The balance has to be perfect in a PvP game... in a PvE game, it doesn't really matter that much." Even at launch, they were constantly rebalancing the modules to make sure it was as close as perfection as it could be.

Where *Eve* is even more interesting is that it's a game which some things simply can't be tested in a petri-dish mini level. It requires the full game world of players to see things how they work. This has become especially true with later additions – like many MMOs, *Eve* has expanded considerably since its initial release – which changed the alliances. "Some things it's impossible to test, except in the large scale," notes Reynir, "like we were introducing player structures. Exactly how we tune the resources they need to run needs a really large community of people working together to run such an organisation. It's very hard to test that in a limited environment."

While CCP have always worked to a plan, it's not as strict as other MMO's developments have



"It's more than a job. It's more of a lifestyle"

Those two engines at the top look like the *Eve* equivalent of getting a stick-on spoiler for your car.

been. Rather than following a checklist, they seem to be chasing a dream, which they approach one delivery state at a time. "After the launch delivery, we'd already decided some of what would be in the next delivery, which was called Castor." However, the one after that – Shiva – they only had rough ideas. The one after that – Kali – they had no idea at all about. Well: none but the hopes. "It was always the dream to have planetary surfaces in Kali" wishes Reynir. They better decide soon, as Shiva was recently released as "Exodus" and they're now turning their attention to Kali.

FUTURE VISIONS

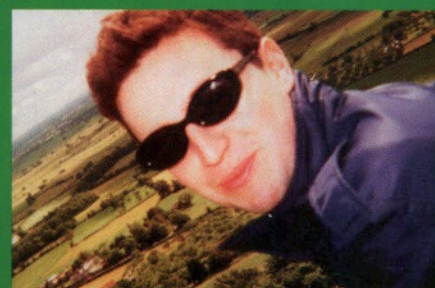
Reynir is clearly hugely pleased by *Eve*. "Never a day goes by when I don't discover something I wish I'd done differently... but on the grand scale, I'm really happy with the game how it is." The most pleasure is gained from seeing how a philosophy of MMO design has led to the sort of interactions they desired. "We were planning to have massive player interactions. We were hoping for players to build large corporations and eventually alliances on top of that... and we've seen some incredible things happening on that level," claims Reynir proudly. "Watching and

seeing people play like that is something truly special, and makes me think we've done something unique. Seeing the great alliances order themselves. Seeing hundreds and thousands of players running warfare for several months... politics, back-stabbing... the logistics of warfare. It's amazing."

And if you could go back in time to speak to a younger, brighter-eyed self, what advice would Reynir offer? He laughs at the concept. "I don't know... It's the most difficult thing I've ever done. The work hours are immense..." He pauses to consider before continuing, "I'd do it different in many ways. It was the first game we made, and we learnt a lot. We also built the company at the same time, so it was a massive learning curve. But I don't think there's anything major I would say. Certainly not 'Don't do it.'"

So what advice does he have for someone who wants to try and bring their pre-teen dreams to life? "Give it a try," Reynir enthuses. "The one thing you must understand before you do it – it's more than a job. It's more of a lifestyle. We live the game. The mood of the forum, controls our mood. If the players are happy, we're happy. It's just hard work and dedication, like anything else. Nothing is impossible." **PCF**

Developer Diary



Work together or fall apart, warns Owain Bennallack. Rebel programmers be warned.

While some remain loners at heart – at least away from MMOGs and *Battlefield 1942* – game programmers have generally accepted that many brains are better than one, given the bloated dimensions of modern projects.

But working in a team hasn't come naturally to every self-taught hacker. It has taken studios a decade to stop certain star programmers from surprising all with a new, unplanned algorithm, that's quite brilliant – but an utter headache for everyone to work with.

Making commercial games is now a group activity. It's just not economically feasible to have half-a-dozen programmers flying solo, reworking each other's routines and ignoring the requests of artists for a particular pipeline feature. Indeed, despite the consequences to the project, studios still sometimes run out of patience with otherwise talented coders, simply because they cannot work in a team.

The next generation are better prepared. Even low-budget indie games and mods typically eat up months of work by several people. There's no shame now in working as a team – in fact, the teams are often celebrated, with tribal identities.

The next step is to adopt modern teamworking practices. Team members could submit a weekly report, detailing what they're up to, who they're waiting on, and any problems they foresee. Creating a searchable database of your assets and modules will prevent new coders wasting time rewriting existing functions. And hold code and art meetings where people are open to feedback.

Over the top for amateur projects? Consider all the half-finished total conversions out there. Did their creators have too little time? Or did they waste it by doing the wrong stuff, or by doing it twice, or by banging their heads against a problem that another team member had already solved?

As The Office's David Brent said, "There may be no 'I' in team, but there's a 'ME' if you look hard enough."

Owain is the Editor of *Develop* magazine.

Star Wars not Sex War

Space: The Final Frontier, but not for girls... apparently

Interestingly, *Eve* differs from most other MMOs in one crucial way. While many games have traditionally attracted higher than gaming-average numbers of female players, CCP hasn't. Quite the opposite. "We're 99.8% male," notes Reynir, "the girls who do play

it really like it. We have some secondary characters from girls who play with their boyfriends, but there's something about space."

"We had this discussion a lot when developing the game," Reynir remembers, "our QA manager was a woman... 'we should try and

make it appeal to girls.' And I was like 'How?' They won't like it. It's impossible. It's a space-fighting-trading game. If someone has advice, we'd love to hear it."

Several thousand lonely space-traders await anyone's devoted attention.

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Question: Which of the following is a type of computer popular among space-conscious gamers and those who travel frequently?

- a) A notebook PC
- b) A tower PC
- c) A WPC

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THE BIG ISSUES DEBATED

Portable video Has it got legs?

Do you want movies on the move, or are handhelds best kept for other tasks?

Apparently, we all want movies on the move. Which is doubtless why all those Microsoft Portable Media Centers are flying off shelves faster than you can say: 'But the resolution's rubbish' and why no one's buying iPods. Back on page 54 we gave our verdict on which handheld machine is likely to conquer the video-in-your-pocket market, but does that market exist, or is it made up of a few stupid-heads? Here are your thoughts...

Is portable video going to be the next big thing?

FOR 30%

My Archos AV400 isn't much bigger than an iPod, and can have DVDs ripped to it, programs recorded to it, and MP3s stored on it. *Little Britain* on the train – nice.

SGT FOX

I use a Pocket PC and have a video converter. If I place a movie in the drive and press a button, I'll be rewarded with a ripped, resized, subbed AVI, ready for copying to my 512MB SD card some hours later... A Pocket PC can do all that a PMC can't – email, web, wi-fi, bluetooth, maps, document editing, ebooks, games...

WARD

I love the idea – on the train, in the car (someone else driving, obviously), formatting the computer... It's better than listening to music. I took the monitor part of my Tablet PC to the laundrette, and watched a series with 24 episodes while I was waiting for the washing to finish.

MR CLARK

Guys.
Porn on the move.
Give me a Portable Media Centre.
Now.

HYDER

AGAINST 70%

I've tried watching video on a four-inch PDA screen, and while it was smooth enough and reasonably clear, it just wasn't an enjoyable way to watch moving images. Unless portable media devices do something radically different (and better), it's always going to be a niche market – the screens just aren't up to the job.

A MACDONALD

What's the point of getting the latest blockbuster onto one of these devices when you can only watch it on a three-inch screen? Some people will buy them (those with more money than sense), but ultimately it will be a very small market for these devices.

DAVE LEAR

If I want entertainment on the move, I'll whack some music on, or play with a hand-held console. I'm not gonna watch a movie on a tiny screen that will fit in my pocket. Did those hand-held TV things ever take off...?

GNI

It's a good idea, but I wouldn't like to get knocked down walking across the road while watching a good clip of film.

NÃO

I can't see it taking off until they do something about power consumption. At the moment videos just use up too much of the battery, too quickly.

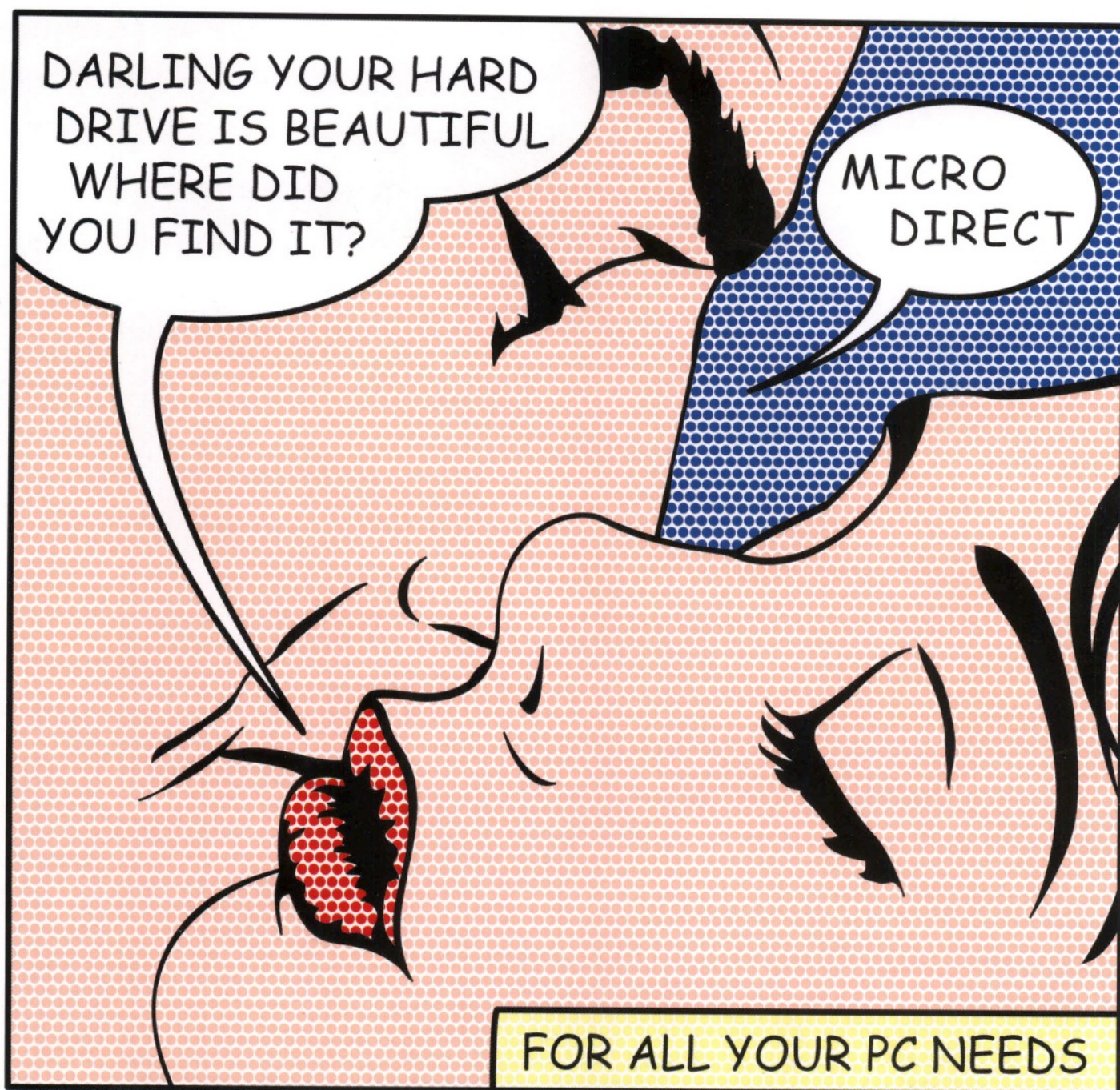
JOE

Why damage your eyesight squinting at a film, when you can go home, relax and watch it on your surround-sound cinema system?

RAGEY

It's April, so we want to hear about PC-related pranks for next month's Over To You. Mail us at pcfmail@futurenet.co.uk

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